User's Manual

Version 1.63 - May 2011

Epsio.

Offside Line and Live Tools

EVS

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Your comments will help us improve the quality of the user documentation. Do not hesitate to send improvement requests, or report any error or inaccuracy on this user manual by e-mail to doc@evs.tv.

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The address and phone number of the EVS headquarters are usually mentioned in the **Help > About** menu in the user interface.

You will find the full list of addresses and phone numbers of local offices on the following page on the EVS website: http://www.evs.tv/contacts

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Table of Contents

TABLE OF CONTENTS III
WHAT'S NEW 1
1. OVERVIEW 2
1.1 PRODUCT DESCRIPTION 2
1.2 CABLING 2
1.3 EPSIO USER INTERFACE 4
1.3.1 Overview 4
1.3.2 Operating Monitor 5
1.3.3 Server Information Area 5
1.3.4 Camera Angle List 7
1.3.5 Zoom 7
1.3.6 Tabbed Area 7
1.3.7 Menu Bar 7
2. CONFIGURATION 10
2.1 OVERVIEW 10
2.1.1 Connection Steps 10
2.1.2 Configuration Steps 10
2.1.3 Saving and Managing the Configuration 11
2.2 CONNECTING EPSIO AND EVS SERVER 12
2.2.1 Starting the EVS Server Application 12
2.2.2 Epsio Settings on Remote Panel 12
2.2.3 Activating the Connection Between Epsio and the EVS Server 13
2.2.4 Checking the Video Feeds 15
2.3 CALIBRATING THE CAMERAS 17
2.3.1 Introduction 17
2.3.2 Calibration Tab 17
2.3.3 How to Calibrate the Cameras 23
2.3.4 Snapshots for Calibration 25
2.3.5 Recommendations for Matching the Virtual Playfield to the Real One 30
2.3.6 Testing your Calibration 34
2.3.7 Adding Virtual Points 37
2.4 CONFIGURING THE CHROMA KEY 39
2.4.1 General Information 39
2.4.2 Accessing the Chroma Key Menus 40
2.4.3 Chroma Key Parameters 42
2.4.4 Chroma Key Edit Screen on the Remote Panel 44
2.4.5 Chroma Key Tab in Epsio 45
2.4.6 Methods and Recommendations for the Chroma Key Definition 48
2.4.7 How to Configure a Chroma Key Based on an Automatic Chroma Key 49
2.4.8 How to Configure a Chroma Key Based on an Area Selected on the Playfield 50
2.5 ADDING AND CUSTOMIZING THE GRAPHIC SUITE 51
2.5.1 Graphic Suite Definition and Components 51
2.5.2 Tools Tab 52

2.5.3 How to Create a Graphic Suite....56
2.5.4 How to Customize a Graphic Suite....57
2.6 DEFINING THE REPLAY SETTINGS....59
3. CREATING GRAPHIC ANIMATIONS....61
3.1 GENERAL INFORMATION....61
3.1.1 Prerequisites....61
3.1.2 Overview on the Epsio Menu....61
3.2 CREATING AN OFFSIDE ANIMATION....63
3.2.1 Remote Menu with Offside Feature Active....63
3.2.2 How to Validate the Playfield Limits....63
3.2.3 How to Create an Offside Line Animation....64
3.2.4 Saving Positions of Offside Line Animations....65
3.3 CREATING A LIVE ANIMATION....66
3.3.1 How to Activate a Live Tool....66
3.3.2 How to Create An Arrow or Circle Animation....66
3.3.3 Using the Graphics Tool in Epsio....66

What's New

The following table describes the sections updated to reflect the new and modified features on Epsio 1.63 (compared to Epsio 1.60).

In the user manual, the icon

has been added on left margin to highlight information on new and updated features.

Click the section number (or the description) in the table to jump directly to the corresponding section.

Section	Description
Section 1.3.3	Changes in the Server Information Area
Section 1.3.7	New commands in the menu bar
Section 2.2.2	New Epsio setting 'Auto Mark'
Section 2.3.5	Improvements in the way you adjust the virtual points described in the section 'Additional Tips'
Section 2.4.5	New **Apply** button in the Chroma Key tab
Section 2.5.4	Slider to edit the tool parameters displayed in the table
Section 3.1.2	Improvement of the 'Detect' function available in the Epsio main menu.
Section 3.2.3	Possibility to clear the mark set for the offside animation.
Section 3.2.4	Possibility to save and recall up to ten offside line animations.

The following table lists sections which have been added or modified to improve the content of the user manual:

Section	Description
Section 2.3.4 and 2.3.5	New sections on calibrating the main camera: • Main Camera Calibration • Virtual Points to be Matched for a Main Camera
Section 2.3.7	Improved section 'Adding Virtual Points'
Section 2.5.4	New procedure 'How to Customize a Graphic Suite'

1. Overview

1.1 PRODUCT DESCRIPTION

Epsio is a graphics solution integrated into the MulticamLSM that allows the operators to control graphic animations, such as offside line, graphic overlays, arrows or circles, using the LSM Remote Panel.

It can be used with the EVS XT family servers and works with Multicam, from version 10.2.30 onwards.

Before the event, the user performs the initial calibration, where the images of the playfield are matched with predefined angles into the system. Based on this calibration, Epsio is able to instantly and automatically recognize the playfield during actions when the playfield is clearly visible on the video signal. The user will also define the chroma key, which means the range of colors on the video signal where the graphic animations will be incrusted.

The operator can then trigger the animation in a one-second operation, using the jog wheel of the LSM Remote Panel.

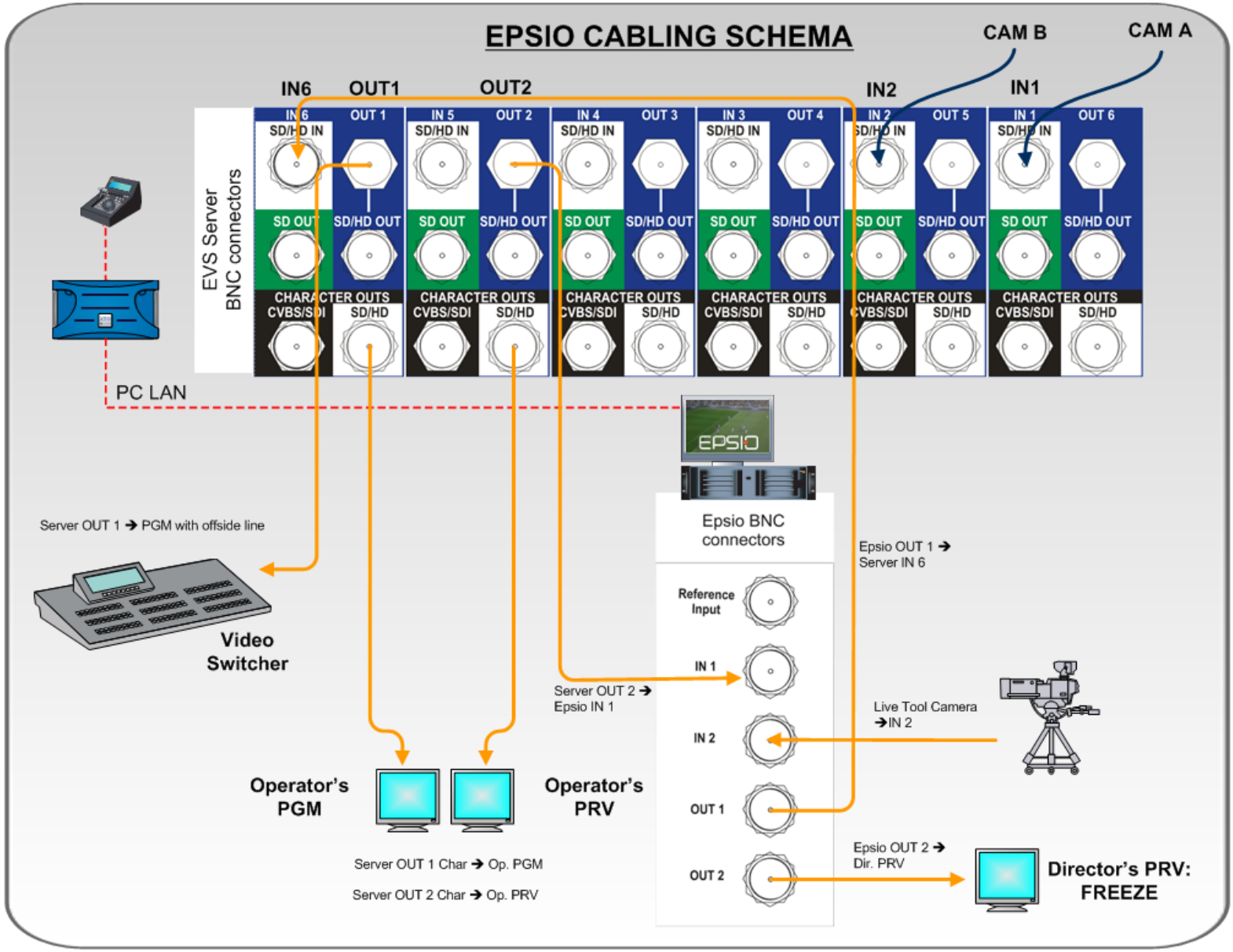
The producer can automatically see a screenshot with the graphic animation, and decide whether or not to play out the entire action with the effects.

Important

If you want to use the live tools in Epsio, you need to have the **Live Tools** license installed in XSecure.

1.2 CABLING

The schema on the following page shows how the Epsio workstation and the EVS server BNC cables should be connected:


EPSIO CABLING SCHEMA
CAM B
CAM A
IN6
OUT1
OUT2
IN2
IN1
EVS Server BNC connectors
IN 6
OUT 1
IN 5
OUT 2
IN 4
OUT 3
IN 3
OUT 4
IN 2
OUT 5
IN 1
OUT 6
SD/HD IN
SD OUT
SD/HD OUT
CHARACTER OUTS
CVBS/SDI
SD/HD
PC LAN
EPSIO
Epsio BNC connectors
Server OUT 1 ➔ PGM with offside line
Video Switcher
Epsio OUT 1 ➔ Server IN 6
Reference Input
IN 1
IN 2
OUT 1
OUT 2
Server OUT 2 ➔ Epsio IN 1
Live Tool Camera ➔IN 2
Operator's PGM
Operator's PRV
Server OUT 1 Char ➔ Op. PGM
Server OUT 2 Char ➔ Op. PRV
Epsio OUT 2 ➔ Dir. PRV
Director's PRV: FREEZE

1.3 EPSIO USER INTERFACE

1.3.1 OVERVIEW

You will access Epsio by clicking the **Epsio** icon on the desktop, or via the **Start** menu in **Program Files > EVS Broadcast Equipment > Epsio > Epsio**.

The following screenshot provides an overview on the Epsio user interface, highlighting the various areas that will be explained in more details in the various sections:

For more information on the LSM Remote Panel, refer to the Multicam Operational User Manual.

Note

When the offside line mode is active on the LSM Remote Panel, you cannot use the mouse outside the operating monitor in Epsio.

To be able to move the mouse in the whole Epsio window, do one of the following:

- In Epsio, press

on the keyboard.
- Press RECORD on the LSM Remote Panel to go out of the offside line mode.

1.3.2 OPERATING MONITOR

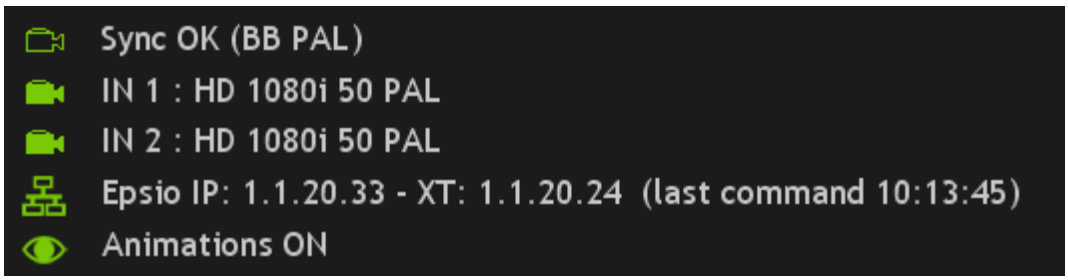
The operating monitor shows the video signal coming from the EVS server and received on the Epsio connector IN1. It allows the users to visualize the configuration action they perform, or the animations they create.

The image on the monitor is surrounded by a colored frame, which varies depending on the tab open in the tabbed area on the right of the Epsio main window:

- Blue frame when the Calibration tab is open
- Red frame when the Tools tab is open
- Green frame when the Chroma tab is open

1.3.3 SERVER INFORMATION AREA

The Server Information area is located at the left bottom of the Epsio main window and provides the following information:



The following table describes the information available in the Server Information area, from the top to the bottom line.

When both systems are correctly connected for both Epsio inputs, the icons in front of the first four lines are green. Otherwise, they are red.

#	Icon	Description
1.		Check that the received blackburst signal corresponds to the video format selected in the Epsio Configurator. Depending on whether the received signal corresponds to the specified video format or not, the following information will be displayed: • NO SYNC • SYNC OK • WRONG SYNC The values between brackets show the requested format, based on the format defined in the Epsio Configurator, and can be one of the following: • BB PAL • BB NSTC • Tri-Level 1080i50 • Tri-Level 1080i60 • Tri-Level 720p50 • Tri-Level 720p60
2.		Check that the Epsio IN1 connector correctly receives the video signal from the EVS server in the specified video format.
3.		Check that the Epsio IN2 connector correctly receives from the EVS server or a camera in the specified video format.
4.		Epsio and EVS server IP addresses Time when the last command was executed on the server. You need to press SHIFT+D when you open Epsio and enter the Epsio menu on the Remote Panel to force the system to check the communication via the Ethernet network, and confirm the connection. In the course of operations, the icon will not automatically turn red if you lose the connection. You need to recheck the communication by entering again the Epsio menu on the Remote Panel.
5.		Information on whether the animation is visible or not.

1.3.4 CAMERA ANGLE LIST

The Camera Angle list shows a thumbnail for each camera angle that has been defined and/or calibrated. You can select a camera angle by clicking the thumbnail. This Camera Angle list is particularly useful in the Calibration phase.

When the camera angle has only been created, but not calibrated yet, the thumbnail shows a grey background and the virtual playfield.

When the camera angle has been calibrated, the thumbnail shows the frame grabbed from the video signal.

1.3.5 ZOOM

The zoom area shows a zoomed display of the area around the mouse pointer on the operating monitor. It mainly allows performing the calibration, as well as other actions, in a very précised way.

1.3.6 TABBED AREA

The tabbed area gives access to the following tabs, in which you can configure Epsio and select the animations you will perform:

- The CALIB tab allows the users to define and calibrate the camera angles.

  See also the section 2.3.2 'Calibration Tab', on page 17.

- The TOOLS tab allows the users to select the animations they want to perform, and refine the settings for these animations.

  See also the section 2.5.2 'Tools Tab', on page 52

- The CHROMA tab allows the users to define the chroma key layer that will define how the offside line animation will be displayed.

  See also the section 2.4.5 'Chroma Key Tab in Epsio', on page 45.

1.3.7 MENU BAR

FILE MENU

The File menu includes the commands for saving and managing the Epsio configuration. They are described in the section 2.1.3 'Saving and Managing the Configuration', on page 11.

SYSTEM MENU

The System menu contains the commands described below:

Command	Description
Video Configuration	This opens the Epsio Configurator tool that allows checking the video feeds. You will find more information on the Epsio Configurator in the section 2.2.4 'Checking the Video Feeds', on page 15.
Support > Keep for Study	This command generates a ZIP file that contains information. This is typically used by the support staff to investigate a snap on which the detection would not work. You need to be in the Epsio menu on the Remote Panel for the ZIP file to be generated. The generated ZIP file is stored in C:\EvsLogs\Epsio and contains the following files: • snapshot of the video signal when the user enter the Epsio menu • the XML files containing calibration information and a parameter description of the snapshot • the EPSIO.cfg file that contains the configuration definition, and allows the support team to recreate your configuration on the support setup.
Support > Update Support Files	This command generates the EPSIO.cfg file that contains the configuration definition, and allows the support staff to investigate an issue with Epsio on your setup by recreating your configuration on the support setup. The file is stored in C:\EvsLogs\Epsio.
Support > Update PCX3 Information	This command enables the users to test the video board. Note that the test will generate disturbances on the video for some seconds. The Help > About window opens and displays the test results. A popup will be displayed if the results do not correspond to acceptable values.
Advanced > Setup External Renderer	Advanced setup parameter. Please contact EVS for more details.
Advanced > Reset 2CPU	Advanced parameters only for support purposes, and in coordination with the support team.

UTILITIES MENU

The Utilities menu contains the commands described below:

Command	Description
Save as JPG	Using this command or the keyboard shortcut CTRL+J, you will take a snapshot in JPG of the video output OUT1. It can then be used as an example. The file is stored in the folder: C:\EvsLogs\Epsio, and is named [Snapshot], followed by the date and time when the snapshot was taken.
Save as BMP	Same as the 'Save as JPG' command, except that the generated screenshot is a .BMP.

HELP MENU

The Help menu contains the commands described below:

Command	Description
Help	This provides a link to the Epsio user manual, in English and in other available languages.
About	This opens the **About** window that features information about: • the Epsio version and licenses • the version and specifications of the graphic board (PCX3) • the support's email addresses and phone numbers • a summary of the keyboard shortcuts active in Epsio.

2. Configuration

2.1 OVERVIEW

The configuration in order to use Epsio with an EVS server has to be performed in the Epsio application or on the EVS server side (via the EVS menu and the LSM Remote Panel), depending on the configuration step.

2.1.1 CONNECTION STEPS

Before you can actually configure Epsio, you first need to set up Epsio and the EVS server to communicate with each other:

#	Step	Where?	See section
1.	Starting the appropriate EVS server application	EVS server	2.2.1
2.	Activating the connection between Epsio and the EVS server	Remote Panel	2.2.3
3.	Checking the video feeds	Epsio	2.2.4

2.1.2 CONFIGURATION STEPS

Once Epsio and the EVS server are properly connected, you can perform the actual configuration steps.

#	Step	Where?	See section
1.	Calibrating the cameras	Epsio	2.3
2.	Configuring the Chroma Key settings	Remote Panel or Epsio	2.4
3.	Customizing and loading the graphic suite	Epsio	2.5
4.	Defining the Replay settings	Remote Panel	2.6

2.1.3 SAVING AND MANAGING THE CONFIGURATION

The commands available in the **File** menu allow you to save and manage the configuration you will perform. The configuration, which includes the camera calibration and the chroma key definition, is saved in a configuration file that is made up of two .xml files:

- A file containing the playfield distances and all camera angle definitions.

  This file is 'name'.xml where <name> is the name the user gives to the configuration when it is saved for the first time.

- A file containing the chroma key configuration.

  This file is 'name'.CK.

In the **File** menu, you have access to the following commands:

Command	Use
New	Use this command before you start a new calibration. This creates a new empty configuration file that you can save throughout the calibration process.
Load	Use this command to point to and load an existing configuration file.
Save	Use this command to save your calibration while you define it. It is recommended to save the configuration after each calibration step.
Save As	Use this command if you want to save the open configuration file into a new name, for backup purposes, or to start a new calibration from an existing one.

The configurations are stored by default in the following location:

`C:/Program Files/EVS Broadcast Equipment/Epsio/Config`.

2.2 CONNECTING EPSIO AND EVS SERVER

2.2.1 STARTING THE EVS SERVER APPLICATION

When using Epsio with an EVS server, you need to run a server application:

- with at least 2 recorder channels and 2 player channels
- in a Multicam LSM base configuration.

For more information on starting an EVS application, refer to the EVS Menu section in the Technical Reference Software manual.

2.2.2 EPSIO SETTINGS ON REMOTE PANEL

The settings to activate the Epsio mode, and specify the default Epsio tool are available on page 9.2 of the Setup menu:

```
Special Effect          p.9.2
[F1]Paint/Target OSD Monitoring: SD
[F2]Offside Line: On
[F3]External Offside: On
[F4]IP Address: xxx.xxx.xxx.xxx
[F5]Default tool: Offside
[F6]Auto Mark: Off

[Menu]Quit [Clr+F_]Dft [F9]PgUp [F0]PgDn
```

These settings are described below:

Setting	Possible Values	Description
[F2] Offside Line	On, Off (default)	Activates the offside line feature, whatever internal or external. When the parameter is set to 'On', the External Offside parameter is displayed.
[F3] External Offside	On, Off (default)	Enables the control of Epsio from the Remote Panel. When the setting is set to 'Off', the offside line feature built in the EVS server is active. The SHIFT+D key in the Operational menu gives access to the Epsio menu. When the setting is set to 'On', the Epsio application is active. The SHIFT+D key in the Operational menu gives access to the Epsio menu. The IP Address and Default Tool parameters are displayed.

Setting	Possible Values	Description
[F4] IP Address	xxx.xxx.xxx.xxx	When the Epsio connection is enabled with the External Offside parameter, the IP Address of the Epsio workstation has to be entered in this parameter to allow the communication between the EVS server and the Epsio workstation.
[F5] Default Tool	Offside, Arrow, Circle, Graphics	When the Epsio connection is enabled with the External Offside parameter, this parameter specifies the tool to be activated by default in the Epsio menu on the Remote Panel.
[F6] Auto Mark	On, Off	When the **Auto Mark** parameter is set to 'On', a cue point is created on the record train where and each time the user enters the Epsio menu. Such cue points are the same as the cue points added manually using the **Mark** key on the Remote Panel, and are managed the same way. For more information on cue points, refer to the Multicam Operation manual.

2.2.3 ACTIVATING THE CONNECTION BETWEEN EPSIO AND THE EVS SERVER

To activate the offside line mode and the external offside line mode, proceed as follows:

1. From the Main menu, select **Setup** by pressing SHIFT + D to enter the Setup menu.
2. Press the F9 key to go to the **Special Effects** settings, and then F0 to go down to page 9.2:

```
Special Effect           p.9.2
[F1]Paint/Target OSD Monitoring: SD
[F2]Offside Line: Off




[Menu]Quit [Clr+F_]Dft [F9]PgUp [F0]PgDn
```

3. Press F2 to access the **Offside Line** setting and rotate the jog dial to set it to 'On'.

   This will display the **External Offside** setting.

```
Special Effect          p.9.2
[F1]Paint/Target OSD Monitoring: SD
[F2]Offside Line: On
[F3]External Offside: Off



[Menu]Quit [Clr+F_]Dft [F9]PgUp [F0]PgDn
```

4. Press F3 to access the External Offside setting and rotate the job dial to set it to 'On'.

   This will display the IP Address setting.

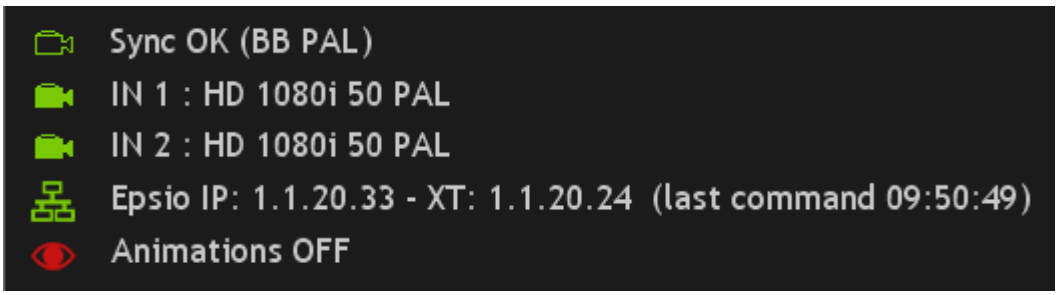
```
Special Effect          p.9.2
[F1]Paint/Target OSD Monitoring: SD
[F2]Offside Line: On
[F3]External Offside: On
[F4]IP Address: xxx.xxx.xxx.xxx
[F5]Default tool: Offside
[F6]Auto Mark: Off

[Menu]Quit [Clr+F_]Dft [F9]PgUp [F0]PgDn
```

5. Enter the IP address of the Epsio workstation as follows:

   After entering the number for an octet with the function keys, validate by pressing ENTER on the LSM Remote Panel.
6. Press MENU twice to go out of the Setup menu.
7. Press SHIFT+D to enter the Epsio menu.

The Epsio workstation should now be connected. In Epsio, the 2nd and 3rd lines (which specify whether the corresponding IN connectors receive the video signal from the EVS server in the requested video format) should have green icons, as well as the 4th line (which specifies the IP addresses):



For more information on this Server Information area, refer to the section 1.3.3 'Server Information Area', on page 5.

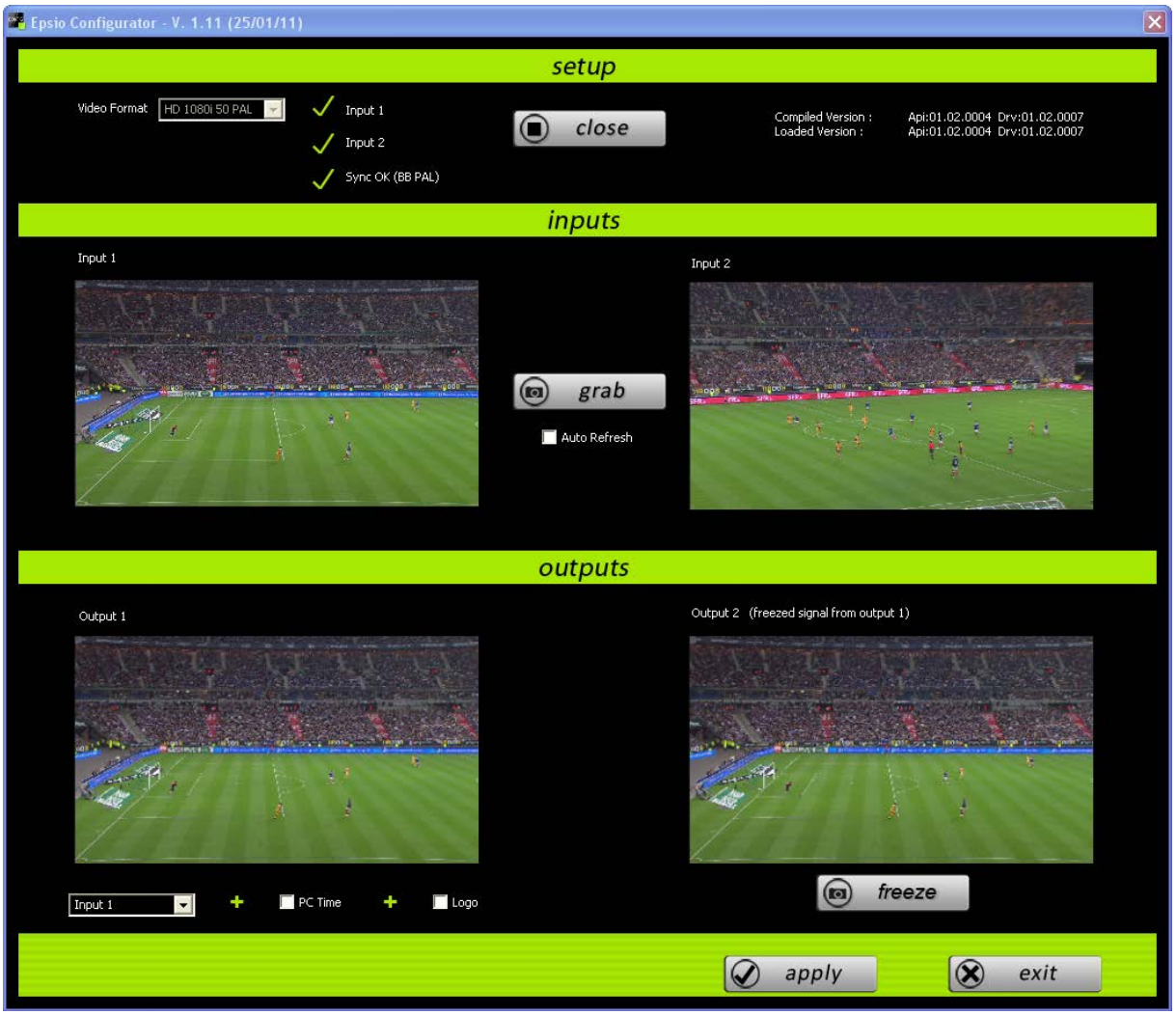
2.2.4 CHECKING THE VIDEO FEEDS

Once you have switched on the Epsio workstation for an event, you should check that you correctly get the feeds before you launch the Epsio software. The Epsio Configurator helps you detect and check the feeds.

To check the video feeds, proceed as follows:

1. To open Epsio Configuration, double click

on the desktop or select **Epsio Configurator** via the **Start** menu in **Program Files > EVS Broadcast Equipment > Epsio > Epsio Configurator**.



2. In the Setup group box, select the **Video Format** you are working with.
3. Click the

button.

   Epsio checks the format you have selected is compatible with the format used by the EVS server.
   If the right format is selected, Epsio automatically grabs and displays an image of the video signals.

4. As you check the incoming and outgoing signals, you can perform the following actions to help you identify the signals:
   - To check the incoming signals, you can click the Grab button to grab the current image delivered to the incoming feeds.
   - To check the output signal from the OUT1 connector, you can either change the signal sent to OUT1 by selecting In 1, In 2, or Bars, or add the PC time or a logo display to the output signal.
   - To check the current output signal from the OUT 2 connector, you can click the Freeze button to refresh the video display corresponding to output 2.
5. When you have checked the incoming and outgoing video signals, click the Apply button.
6. Click Exit.

2.3 CALIBRATING THE CAMERAS

2.3.1 INTRODUCTION

In Epsio, calibrating the cameras consists of positioning a virtual playfield in a 3D environment to match the position of the actual playfield used for a given event. You calibrate the cameras in the Calibration tab in Epsio.

OFFSIDE LINE CALIBRATION

When you use the offside line tool, you usually calibrate two 16-meter cameras for an event: a left-angle camera and a right-angle camera. However, Epsio allows you to use other cameras.

You calibrate each 16-meter camera on two angles: looking at the goad area, and at the central circle.

LIVE TOOLS CALIBRATION

When you use the live tools, you calibrate the camera that is directly connected to Epsio via the IN2 Connector. For this physical camera, you will calibrate a main camera in Epsio. The three angles (left, center and right) are automatically added to the Camera Angle List when you add a main camera in the Calibration tab.

Important

Only calibrate your cameras when you have validated the camera position, height and orientation. These should no longer change after the calibration.

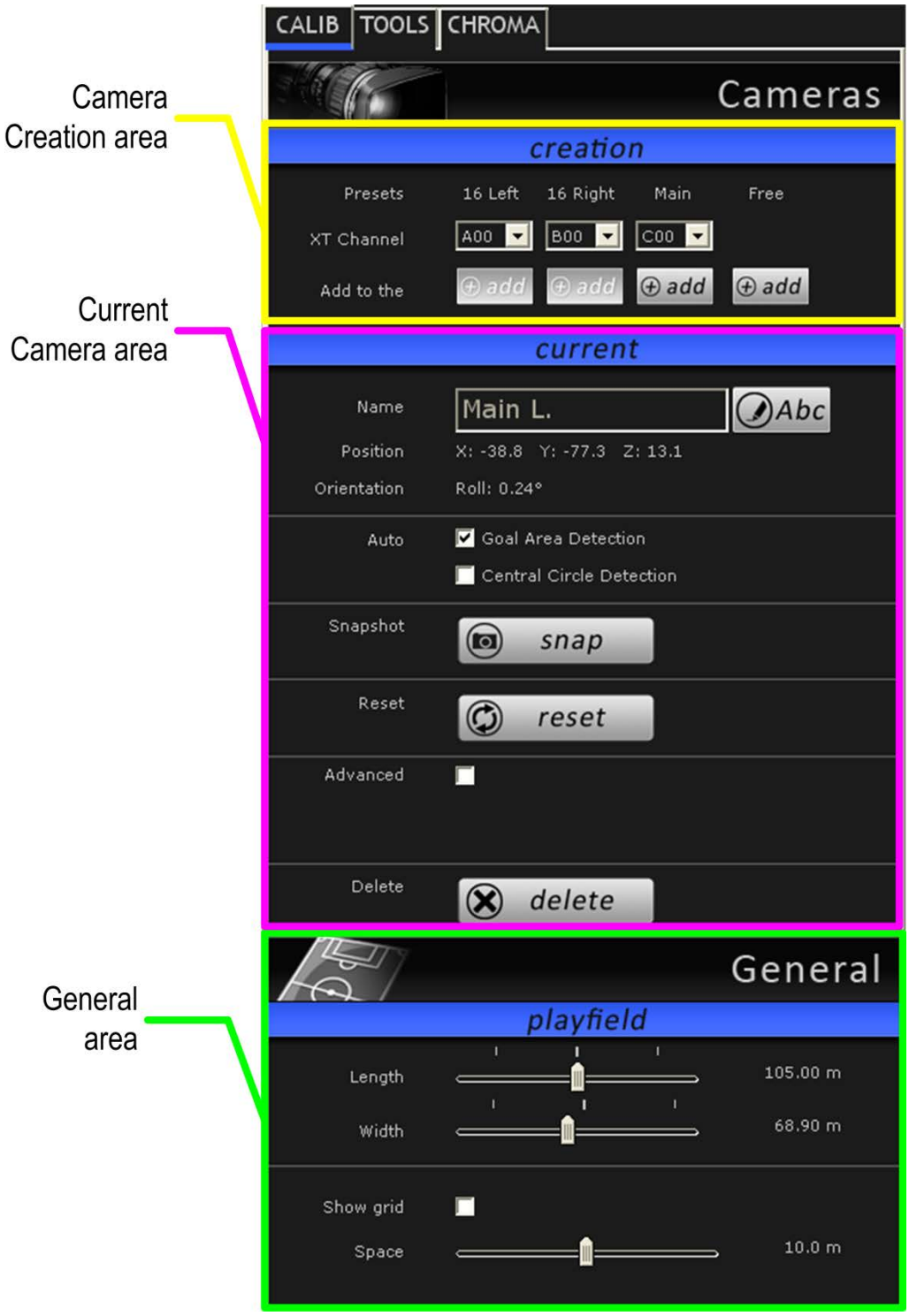
2.3.2 CALIBRATION TAB

OVERVIEW

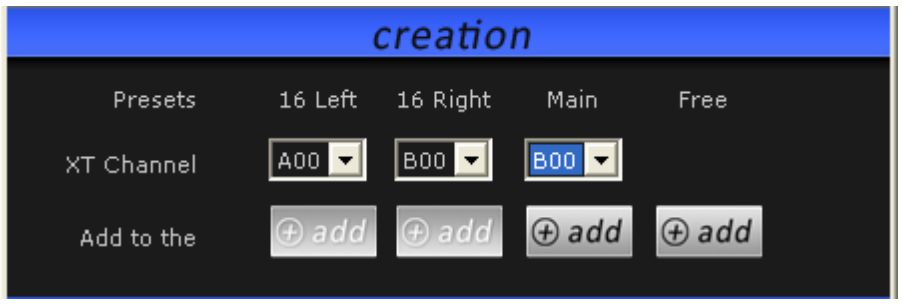
The following table gives a short explanation on each area of the Calibration tab displayed below:

Area	Description
Camera Creation	This area allows you to add cameras, and assign them to a recorder channel on an EVS server. See also the section 'Camera Creation Area', on page 19.
Current Camera	This area allows you to perform several actions on the selected camera. See also the section 'Current Camera Area', on page 20.

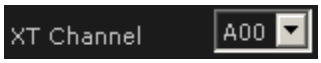
Area	Description
General	This area allows you to modify the default playfield size (105 meters by 68 meters), as well as to display and/or modify the grid of the virtual playfield. See also 'General Area', on page 22.



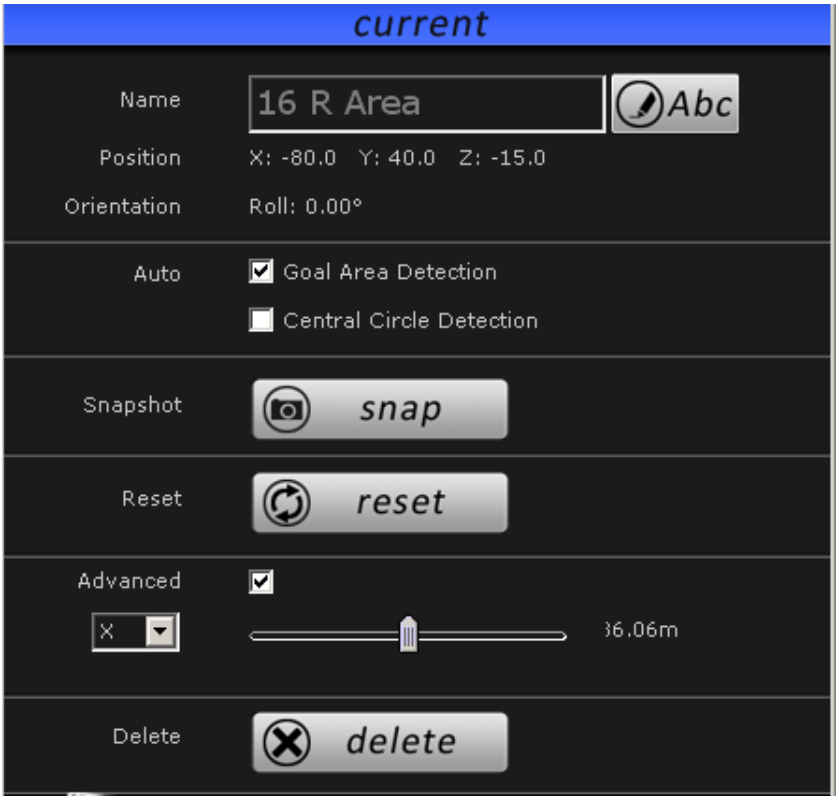
CAMERA CREATION AREA



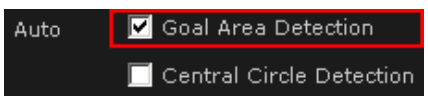
This area allows you to add cameras, and assign them to a recorder channel on an EVS server.

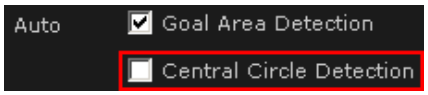
Field	Description
	Buttons that allow the user to define a new camera in the system. Several preset cameras are available: • The **Add** button below the **16 Left** label allows adding a 16-meter left-angle camera. It creates two cameras angles (goal and center). • The **Add** button below the **16 Right** label allows adding a 16-meter right-angle camera. It creates two cameras angles (goal and center). • The **Add** button below the **Main** Label allows adding a camera for the live tools. It creates three camera angles (left, center, right). • The **Add** button below the **Free** Preset label should be used to create any other camera. It creates one camera angle.
	Field to associate the recorder channel of the EVS server to the created camera. The field value is made up as follows: • The first letter is the camera letter on the server • Keep the last two digits as is (00). By default, the **A** channel is assigned to the 16-meter left camera, and the **B** channel is assigned to the to the 16-meter right camera.

CURRENT CAMERA AREA

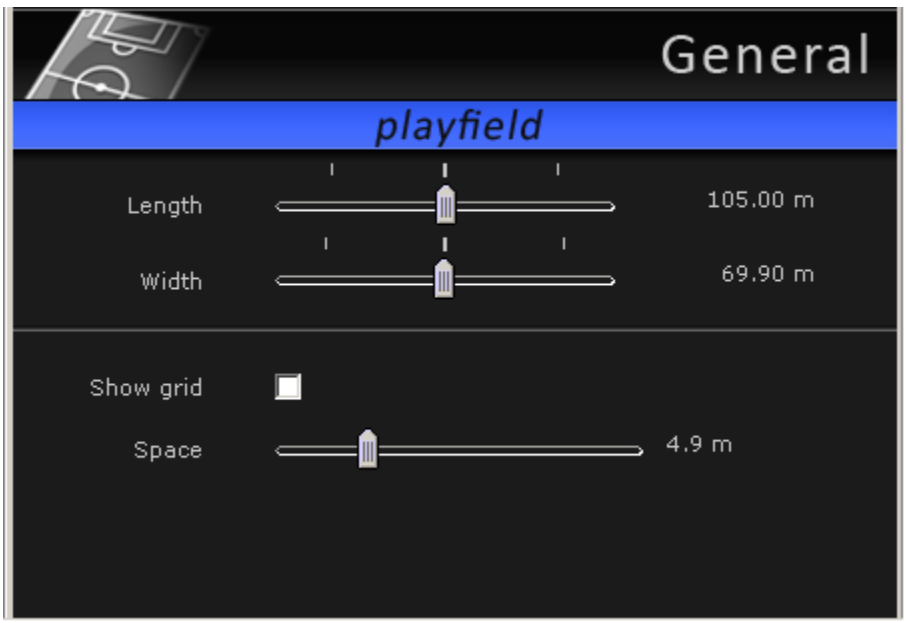


This area allows you to perform several actions on the current camera. The current camera is the one selected in the Camera Angle list. This is displayed in a blue frame in the Camera Angle list.

Field	Description
	Displays the name of the camera selected in the Camera Angle list below the operating monitor. The camera name can only be modified using the button.
	Rename button used to rename the camera.
	Non-editable field that summarizes the parameters for the camera position.
	Non-editable field that summarizes the parameters for the camera orientation.
	Check box to be ticked when you calibrate a camera (left, right, central or free) to specify that the angle of detection corresponds to the goal area. For the automatic detection to work properly, the image should clearly display the goal area.

Field	Description
	Check box to be ticked when you calibrate a camera (left, right, central or free) to specify that the angle of detection corresponds to the central circle. For the automatic detection to work properly, the image should clearly display the central circle.
	Snap Button used to grab a new image of the playfield on which the calibration of the camera will be based. It grabs the current frame on the video input 1 (PGM1).
	Button used to reinitialize the display of the virtual playfield for the selected camera.
	Button used to delete the selected camera.
	Check box to display or hide the two fields below used for fine-tuning the current camera position.
	Field that allows selecting the position parameter you want to modify among the following ones: • X axis: north/south axis to define the camera position • Y axis: east/west axis to define the camera position • Z axis: up/down axis to define the camera position • Pan: angle to define the horizontal orientation of the camera on its position, in this case from 85° to 125° • Tilt: angle to define the vertical orientation of the camera on its position, in this case from 60° to 100°. • Roll: angle to define the camera orientation along its longitudinal axis, in this case from -20 to +20° • Orientation: mix of Y axis and pan, to simulate a rotation around the center of the playfield
	Once the position parameter is selected, you can change its value dragging the slider to the right or left.

GENERAL AREA



This area allows you to modify the size of the virtual playfield, and whether/how grids will be displayed on the virtual playfield.

Field	Description
Length	Slider to modify the default playfield length (105 meters).
Width	Slider to modify the default playfield width (70 meters).
Show Grid	Check box to display or hide the grid on the virtual playfield
Space	When the grid is displayed, the space slider makes it possible to modify the line space in the grid.

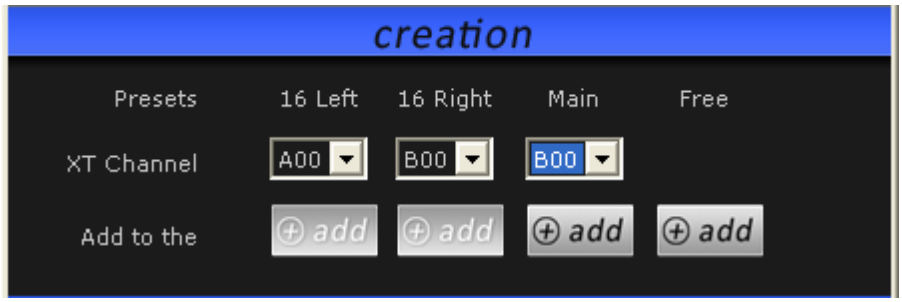
2.3.3 How to Calibrate the Cameras

Note

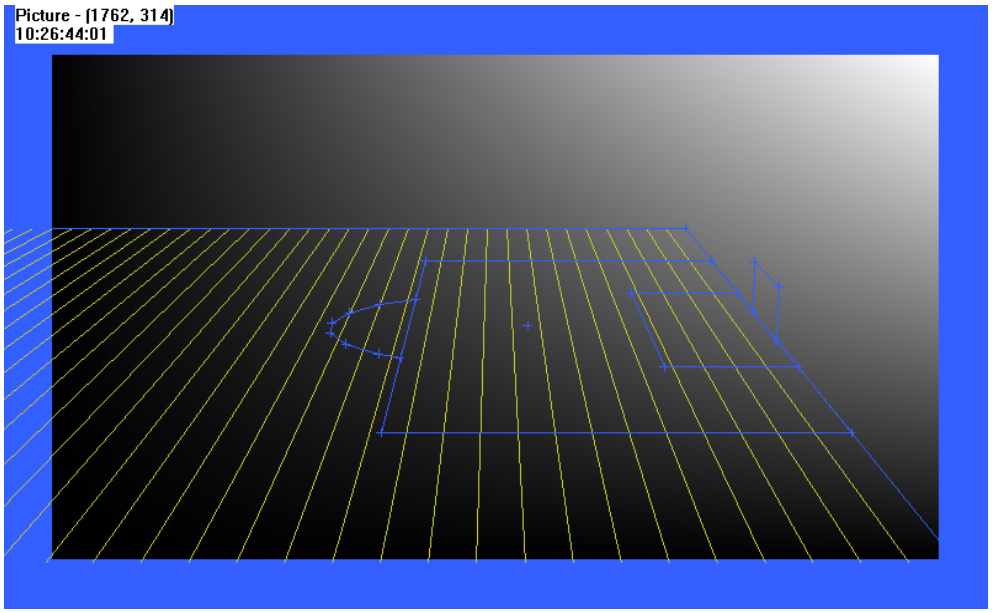
The calibration steps explained in the sections below illustrate the calibration of the two 16-meter cameras used with the offside line tool. However, the same procedure applies to the calibration of the free camera for the live tools.

Once Epsio is open, you calibrate the various cameras in the CALIB tab, in the following way:

1. Add a virtual camera for each physical camera to be calibrated, by clicking the Add button corresponding to the requested camera in the Creation area:



The camera angles to be calibrated for the corresponding camera preset are added as frames including the virtual playfield in the Camera Angle list:



2. Using the Preview channel, make snapshots of the real playfield corresponding to each calibration angle in the following way:

   a. In the Camera Angle list in Epsio, click the camera angle to which you want to associate a snapshot.

   b. Pause on the requested frame in the preview channel.

c. Click

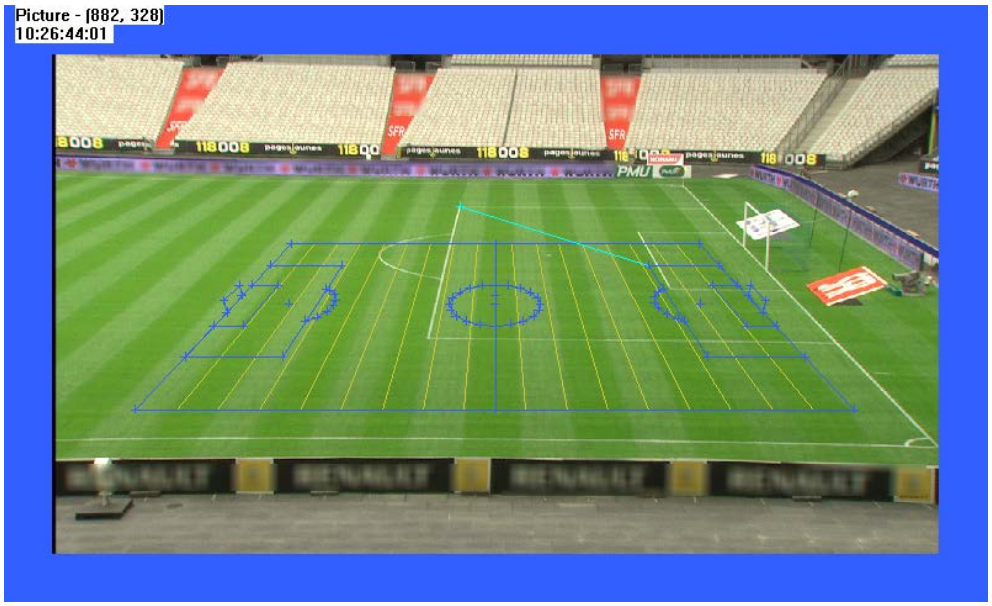
in the Current area in Epsio.

For more information, refer to the section 2.3.4 'Snapshots for Calibration, on page 25.

3. For each camera angle, perform a rough calibration, by matching four non-contiguous virtual anchor points to the real position in the playfield as follows:

- Right-click a virtual anchor point (crosses on the lines) on the requested camera angle and drag it to the corresponding position on the real playfield, then release.

A light blue line is drawn between the virtual point and the matched point on the snapshot:



Once the fourth point has been matched, the virtual playfield is automatically superimposed to the snapshot.

For more information on the four points to be matched, and on the possible actions with the mouse, refer to the section 2.3.5 'Recommendations for Matching the Virtual Playfield to the Real One', on page 30.

4. To refine the calibration of a virtual point, do the following:

a. Position the mouse around the virtual point (it is surrounded by a red circle).

b. Use the Arrow keys on the keyboard to adjust the virtual point.

5. Adjust the playfield size if necessary:

- Check that touchlines are not too long or too small on the four calibration angles, and if necessary adjust the playfield width.
- Check that the central circle is not too large or small on the two central calibration angles, and it necessary adjust the playfield length.

6. Click the menu File > Save to save the configuration. The default location where configurations are stored is `C:/Program Files/EVS Broadcast Equipment/Epsio/Config`.

The camera angles defined in Epsio are now associated to snapshots of the real playfield and saved in a configuration file. You can load them back via the File > Load menu. See also the section 2.1.3 'Saving and Managing the Configuration', on page 11.

7. Use varied test snapshots to make sure the calibration is acceptable as a whole. If necessary, perform some adjustments by repositioning only the anchor points initially matched in step 3.

   For more information on the calibration tests, see the section 2.3.6 'Testing your Calibration', on page 34.

8. On a shot that includes the 16-meter line, and part of the central circle, add virtual points for offside shots where playfield lines would not be visible.

   For more information on additional virtual points, see the section 2.3.7 'Adding Virtual Points', on page 37.

2.3.4 SNAPSHOTS FOR CALIBRATION

16-METER CAMERA CALIBRATION

Introduction

For each 16-meter camera used for the offside feature, you need to take two snapshots corresponding to each camera angle:

- Goal area
- Central circle

Important

Keep the following in mind when you select the frame you will use:

- A playfield is naturally curved, whereas the Epsio virtual field is made up of straight lines.
- A very wide shot is very likely to distort the image, which will intensify the curved effect of the field.

Goal Area Calibration

The snapshot for the goal area of the left or right 16-meter camera should show:

- the whole left or right penalty area (respectively) with the 16-meter and 6-meter lines
- the goal line along the goal area,
- part of each touchline on both sides of the playfield.

Important

The touchlines should be parallel to the horizontal borders of the frame, and the zoom should keep the distortions of touchlines as low as possible.

Figure 1: Good Snapshot for the calibration of the goal area with a left 16-meter camera

Figure 2: Good Snapshot for the calibration of the goal area with a right 16-meter camera

Central Circle Calibration

The snapshot for the central circle of the left or right 16-meter camera should show:

- the whole central circle (not necessarily the full central line),
- the 16-meter line of the left or right penalty area (respectively), and the penalty arc.
- part of each touchline on both sides of the playfield.

Figure 3: Good Snapshot for the calibration of the central circle with a left 16-meter camera

Figure 4: Good Snapshot for the calibration of the central circle with a right 16-meter camera

New!

MAIN CAMERA CALIBRATION

You need three calibration shots to calibrate the central camera:

- Left penalty area
- Central circle
- Right penalty area

Important

Keep the following in mind when you select the frame you will use:

- A playfield is naturally curved, whereas the Epsio virtual field is made up of straight lines.
- A very wide shot is very likely to distort the image, which will intensify the curved effect of the field.

Goal Area Calibration

The snapshots for the goal area of the main camera should show the following elements:

- the central line
- the whole left/right penalty area (depending on the shot)

The shot should be as close as possible while containing the above-mentioned elements.

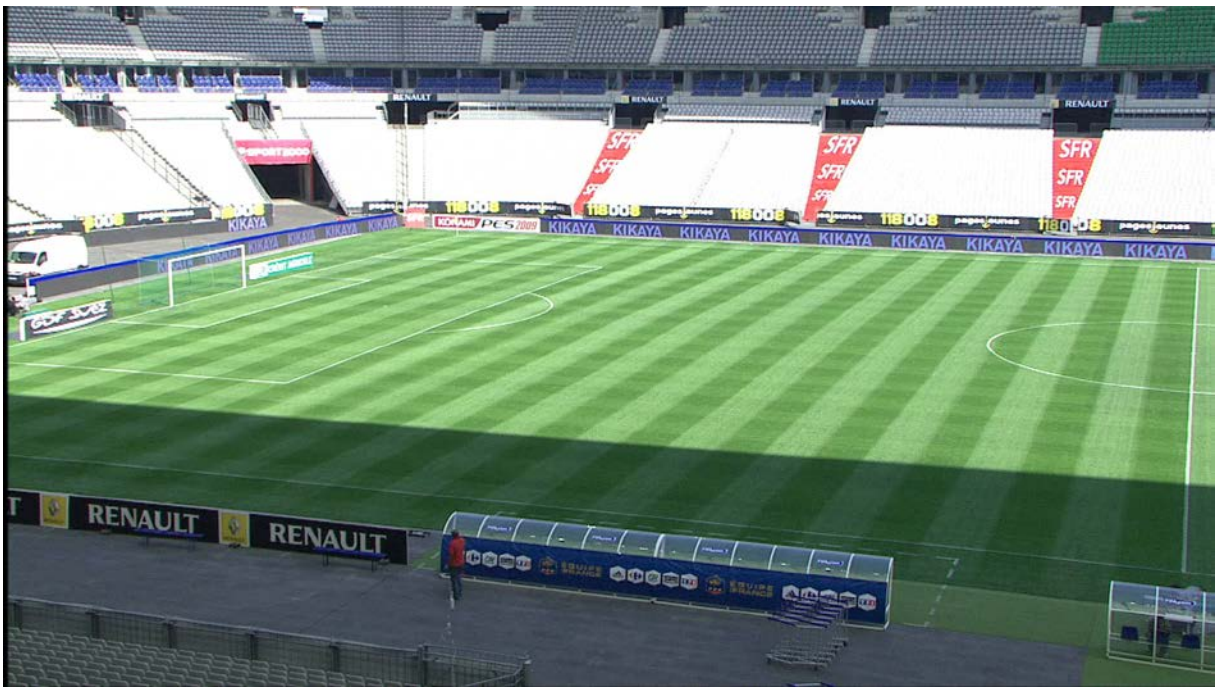


Figure 5: Good Snapshot for the calibration of the left goal area with a main camera

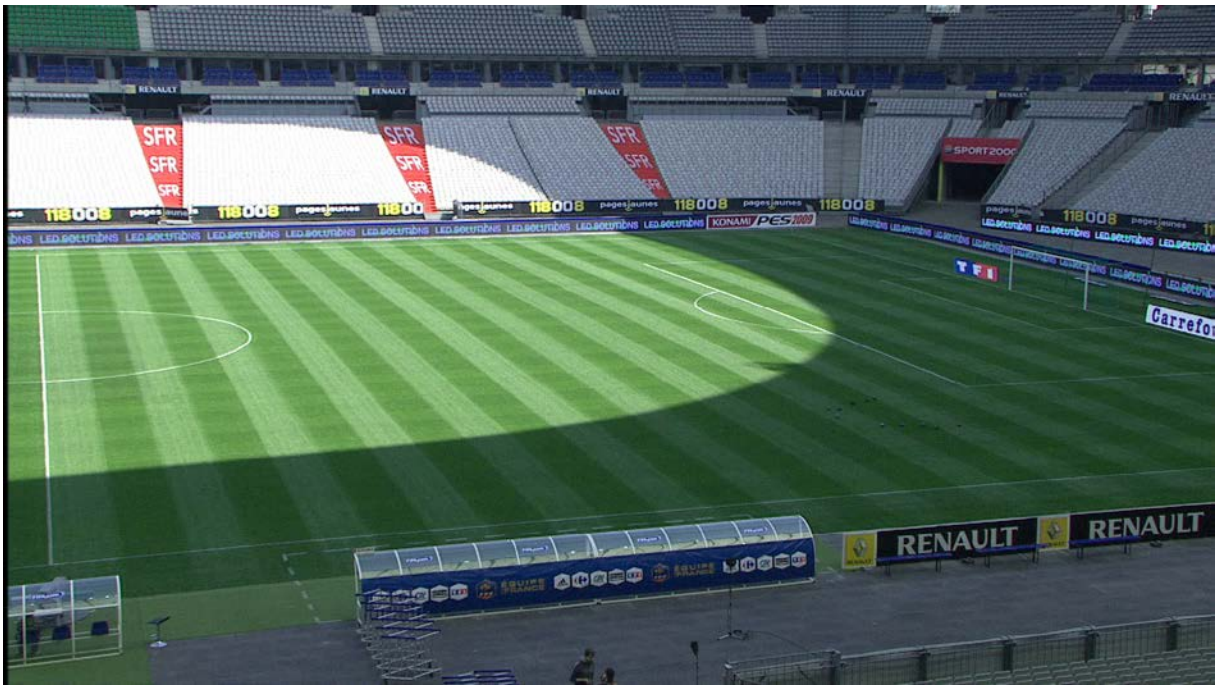


Figure 6: Good Snapshot for the calibration of the right goal area with a main camera

Central Circle Calibration

The snapshot of the central circle area should show the following elements :

- the whole central circle
- the upper and lower touchlines
- both upper ends of the left and right 16-meter line (if possible).

Figure 7: Good Snapshot for the calibration of the central circle with a main camera

2.3.5 Recommendations for Matching the Virtual Playfield to the Real One

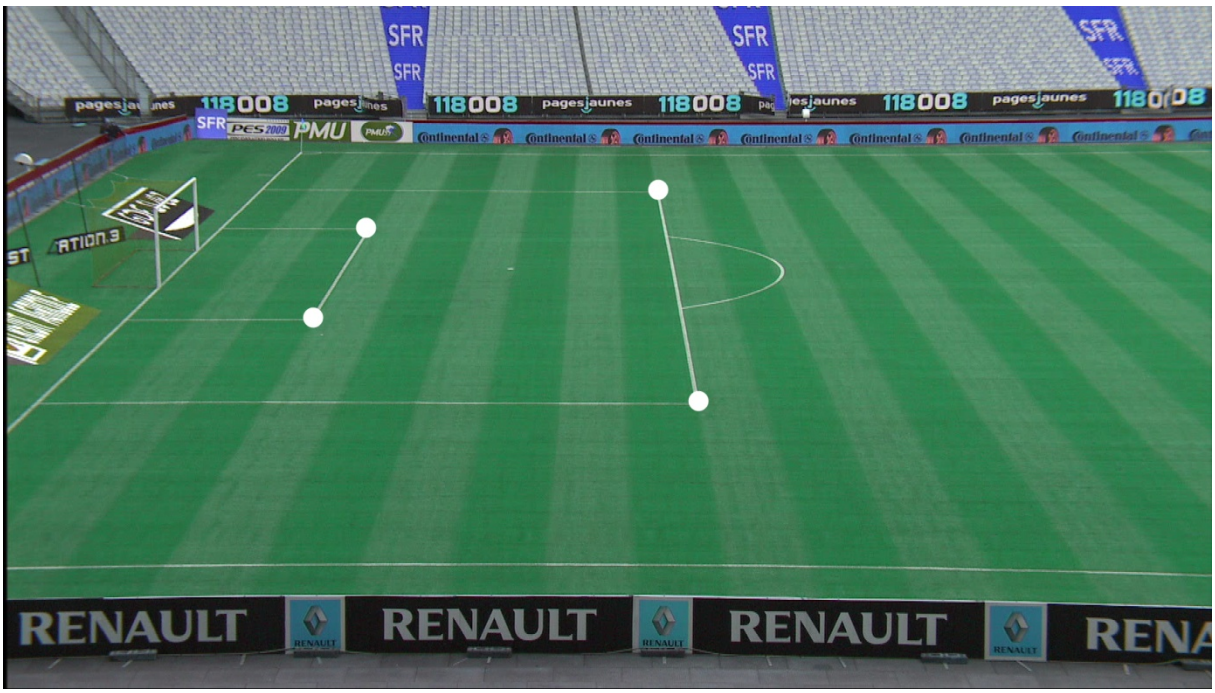
Virtual Points to be Matched for a 16-Meter Camera

The following screenshots highlight the four virtual points you are advised to use for each camera angle of a left 16-meter camera to perform an optimal calibration. Use equivalent virtual points for the right 16-meter camera.

Goal Area

Four virtual points are used as calibration points on goal area of the left or right 16-meter camera:

- both ends of the 16-meter line
- both ends of the 6-meter line



Central Circle

Four virtual points are used as calibration points:

- both intersections between the central line and the central circle
- both upper ends of the 16-meter lines

New!

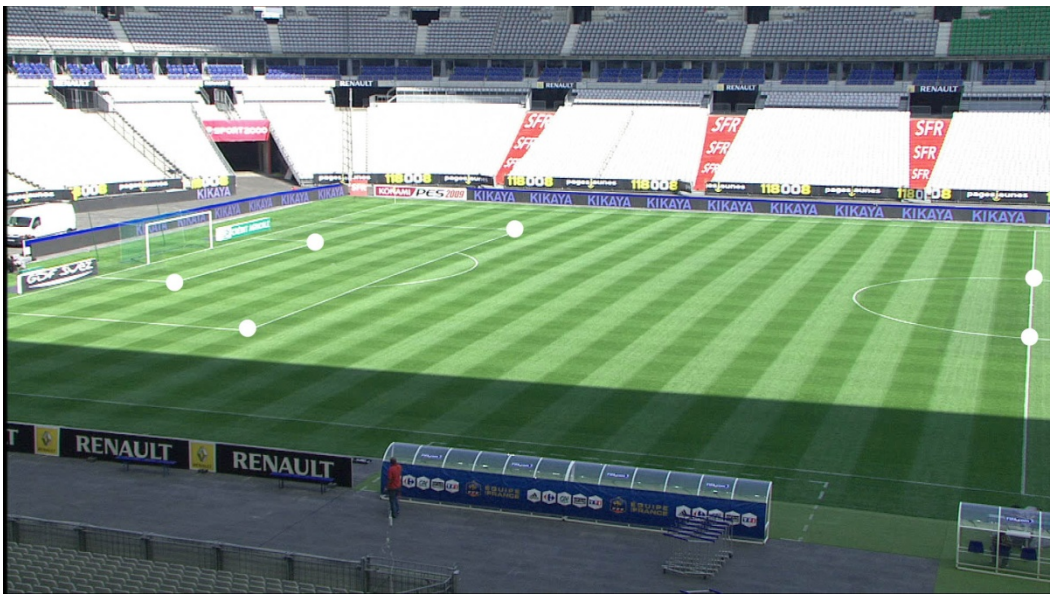
VIRTUAL POINTS TO BE MATCHED FOR A MAIN CAMERA

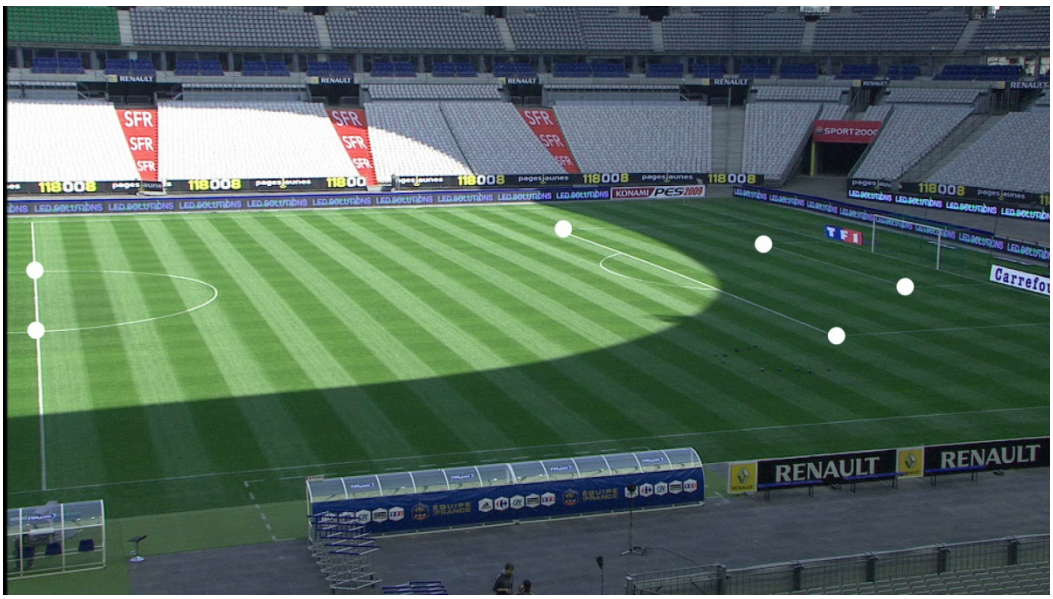
The following screenshots highlight the virtual points you are advised to use for each camera angle of a main camera to perform an optimal calibration.

Goal Area

Six virtual points are used as calibration points on each shot:

- both ends of the 16-meter line
- both ends of the 6-meter line
- both intersections between the central line and the central circle

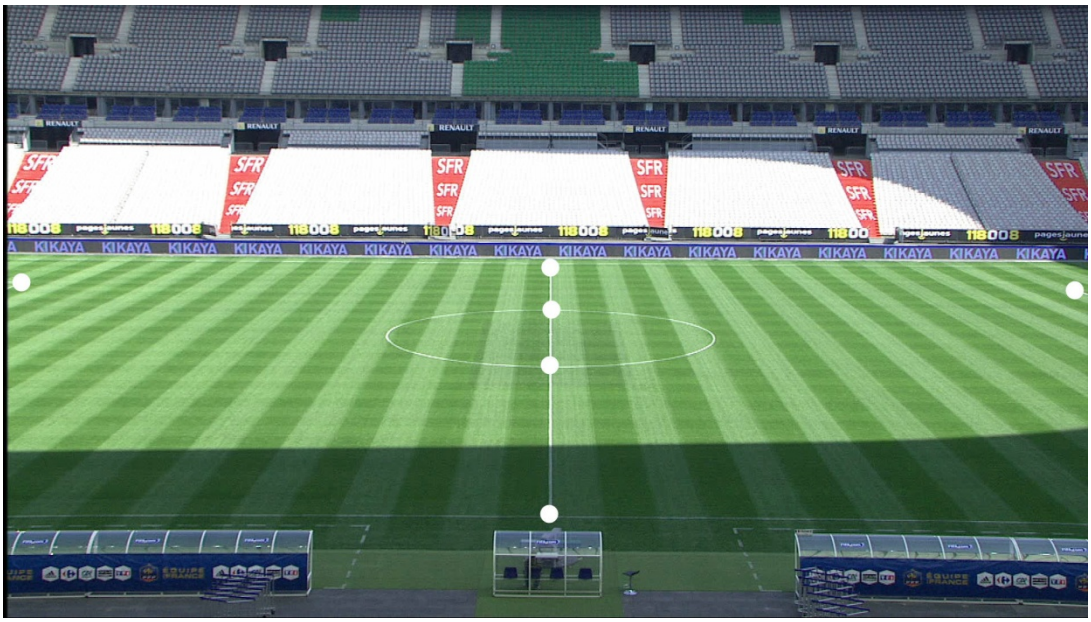




Central Circle

The following virtual points are used as calibration points:

- both intersections between the central line and the central circle
- both upper ends of the 16-meter lines
- intersections between the central line and the touchlines (if necessary)



POSSIBLE ACTIONS USING THE MOUSE

Here are the possible actions you can perform in this step:

- To select a virtual point, right-click on it.
- To delete a virtual point, click on it.
- To add a virtual point, press CTRL + click on the virtual field at the position where the point should be added.
- To remove a virtual point you have added, click on it.

ADDITIONAL TIPS

Here are the following tips to help you in this step:

- Once you have selected a virtual point, you can adjust its position in one of the following ways:
  - Pressing the arrow keys on the keyboard for small increments
  - Pressing simultaneously SHIFT and the arrow keys on the keyboard for bigger increments.

New!

- When the mouse pointer is close to a virtual point, a red circle surrounds it, and the arrow keys on the keyboard are automatically activated to enable you to adjust the point.

New!

- The four anchor points you use to calibrate a camera angle should not be aligned.
- Always match the points to the same edge of the lines.
- You can use more than 4 points to perform the calibration.
- If the 2nd and 3rd tests of the goal area calibration for a given camera are excellent, you can use the position parameters (x,y,z) of this camera angle for the central circle calibration of the same camera.

2.3.6 TESTING YOUR CALIBRATION

GENERAL TEST FOR A 16-METER CAMERA

Once you have calibrated all your camera angles, it is recommended to test them using test snapshots of the playfield.

A general and quick test consists of drawing an offside line, and rolling it over the calibration shots, to ensure that the offside line matches the following lines of the field:

- the 16-meter line
- the 6-meter line
- the half-way line

Systematic tests based on test snapshots are explained in details below.

TESTING THE GOAL AREA

1st Test

Using the same view as your calibration shot, take an offside shot.

Check that the 16-meter line and 6-meter line are correctly matched.

If necessary, reposition the faulty anchor points.

2nd test

Move the camera to the bottom corner arch without changing the zoom.

Check that the 16-meter line and 6-meter line are correctly matched.

3rd test

Move the camera back to the goal area, keeping the 6-meter and 16-meter lines.

All lines must match.

If the tests are not satisfactory, refine the calibration by matching several calibration points again. Each time you modify your calibration, you need to perform the tests again.

When you do not achieve perfect results using calibration points, you can modify the advanced settings for the camera position in the Current area to fine-tune your calibration. These parameters allow a global modification of the calibration for each camera, taking into account the X, Y, Z position, as well as the orientation with the pan, tilt and roll angles. See also the description of the Advanced group box in the section 'Current Camera Area', on page 20.

TESTING THE CENTRAL CIRCLE

All lines must be correctly matched on the calibration shot. Besides this, you should test three additional test shots:

1st test

Using the same view as your calibration shot.

Check that the central circle is correctly matched, and that the borders of the half-way line are correctly matched.

If necessary, reposition the faulty anchor points.

2nd test

Center the camera on the half-way line to see the whole line.

When you draw an offside line on this shot, the virtual line should touch both ends of the half-way line. Due to the natural playfield curve, the offside line may not fully correspond to the half-way line around the middle of the line.

3rd test

Move and zoom the camera to view the 6-meter line, and part of the half-way line.

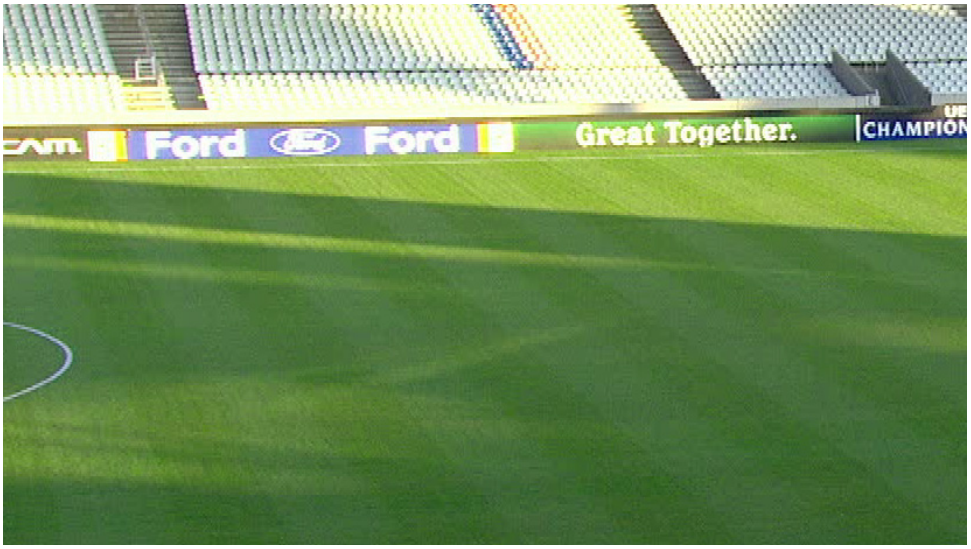
Use this test shot to add your additional virtual points.

2.3.7 ADDING VIRTUAL POINTS

PURPOSE

When Epsio is not able to automatically detect the playfield limits, the operator has to validate the playfield limits manually as explained in the section 3.2.2 'How to Validate the Playfield Limits', on page 63.

In extreme cases, shots do not display any playfield line. This is the case, for example, with a close-up between the central line and the 16-meter line, as shown below:



In such a situation, you can use additional points, which are not included in the original mapping model, to validate the playfield limits.

It is recommended to add the additional points at this stage of the calibration.

RULES

Follow the rules specified below when you add virtual points:

- The additional virtual points are only added to the calibration of the camera angle you are editing. You will not be able to use the additional virtual points on other camera angles.
- Choose the additional virtual points using positions that you will easily identify during the live event, that is to say the stadium geometry: first step of the terracing, static banners around the field, etc.
- Add at least two additional virtual points.
- To add virtual points for the central circle, for example, you can use a shot similar to the snapshot used for the 3rd calibration test of the central circle.

PROCEDURE

To define an additional virtual point, press CTRL + click where you want to add the point on the calibration shot.

TEST

To test the additional virtual points, proceed as follows:

1. Select a shot on which you barely see the playfield lines (typically with the upper part of the half-way line and a portion of the 16-meter line).
2. Press SHIFT + D on the Remote Panel.
3. Reposition manually the virtual playfield on the shot using the visible playfield lines.

You can then check that the additional virtual points are correctly placed, and match the requested position. Otherwise, go back to the calibration shot, and modify the position of the wrong additional point.

2.4 CONFIGURING THE CHROMA KEY

2.4.1 GENERAL INFORMATION

CONCEPT OF CHROMA KEY

The chroma keying is a technique for compositing two images or frames together in which a color (or a range of colors) from the main image (video signal) is removed (or made transparent), revealing another image behind it. The key is the image that punctures through the image of the video signal.

In Epsio, you select the green color of the playfield (or a range of green) and replace it by the key layer. The key layer will define how the offside line animation will be displayed:

- All that is white in the key layer will not be incrusted.

  In the final result, the key is transparent and the main image will show.
- All that is black in the key layer will be incrusted with the offside line animation.

  In the final result, the main image is covered by the offside line animation.
- The more an area is black, the more the incrusted material will show.

In summary, when you define the chroma key, you define the color or color range in the video signal that will be replaced by the offside line animation.

IMPACT OF LIGHT CONDITIONS

As the chroma key depends on the light, it is recommended to configure the chroma key 30 minutes before the match to get the closest to the light conditions that will prevail during the match.

For a match during the day, you should perform two chroma key configurations: one for light, one for dark, to allow you to cope with shadows on the playfield.

In case you have a bright light, but a large shadow across the field (for example the top of the stadium roof structure), you can also make a chroma key matching light and shadows, in which case the players would be under the graphics.

For a match during the night, you can configure a chroma key as soon as the sun is down and the stadium lights are on.

RECOMMENDATIONS

You can define the chroma key:

- in the chroma key edit screen on the LSM Remote Panel
- in the CHROMA tag in Epsio.

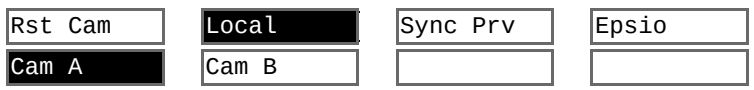
It is recommended to configure the chroma key using the Remote Panel. For this reason, we will provide minimal information on the chroma key definition using the CHROMA tab in Epsio.

2.4.2 ACCESSING THE CHROMA KEY MENUS

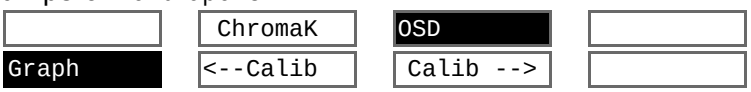
ON THE LSM REMOTE PANEL

To access the Chroma Key edit screen on the LSM Remote Panel, proceed as follows:

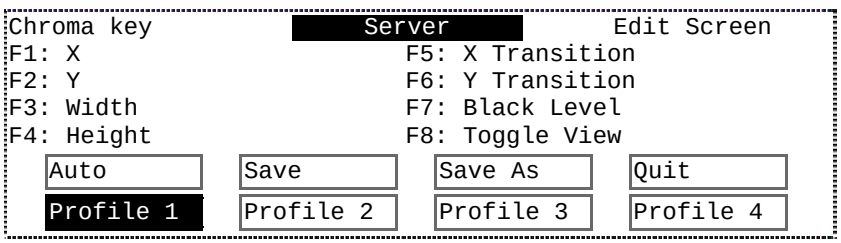
1. From the operational menu in PGM/PRV mode, press the SHIFT+D key to enter the Epsio main menu:



The Epsio menu opens:



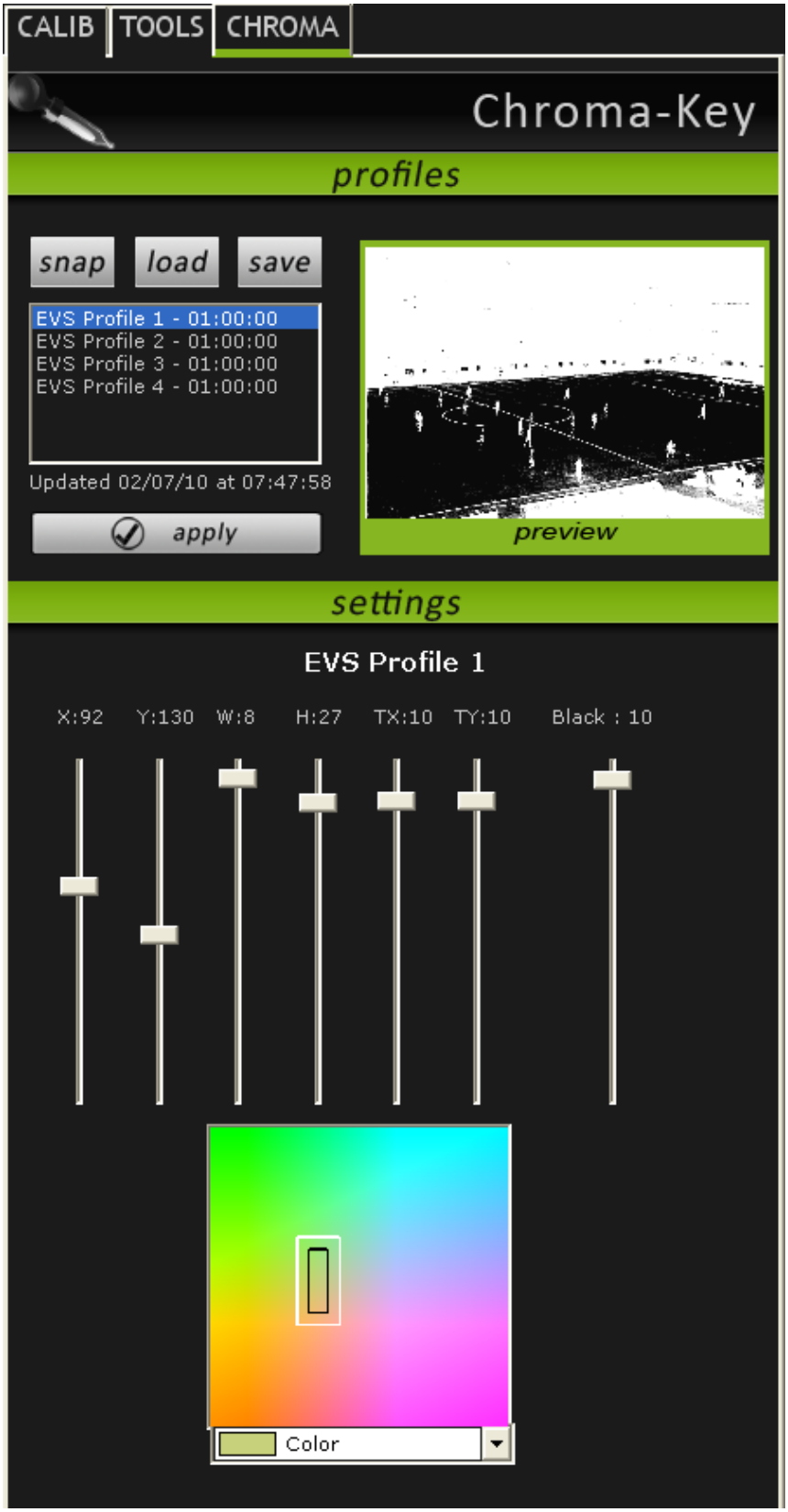
2. In the Epsio menu, press SHIFT+B to enter the Chroma Key edit screen.



You will configure the chroma key from this menu.

IN EPSIO

In Epsio, you can configure the chroma key in the CHROMA tab:



2.4.3 CHROMA KEY PARAMETERS

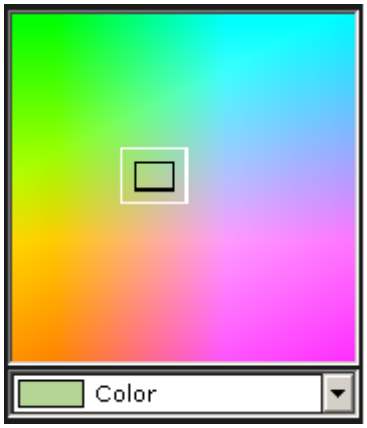
You can create and manage up to four chroma key definitions from the LSM Remote Panel, or in Epsio, using the chroma key profiles.

The various chroma key parameters allow you to define or refine a chroma key profile.

The representation of the chroma key definition in a color space will help you visualize the range of colors taken into account in the chroma key definition.

REPRESENTATION OF THE CHROMA KEY IN EPSIO

A YUV color space is displayed on the CHROMA tab in Epsio to represent the color range selected in the chroma key:

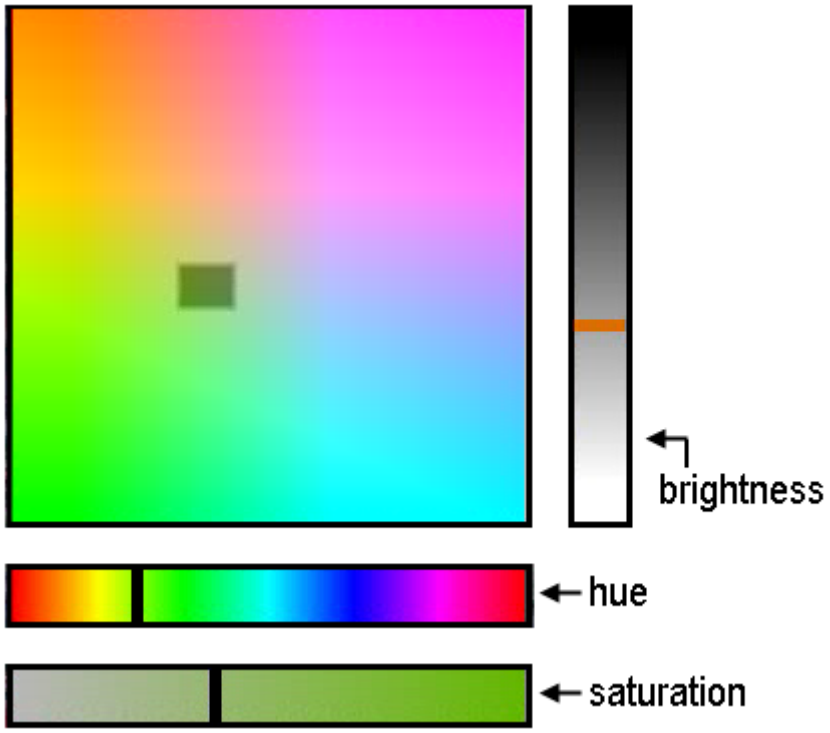


The chroma key definition is represented as follows on the color space:

- The black box in the color space corresponds to the colors that are totally removed on the chroma key layer (black).
- The colors between the black and white boxes in the color space correspond to the transition color range, in other words to the colors that will be more or less removed on the chroma key layer. The white box is clearly displayed in Epsio.
- The colors outside the white box in the color space correspond to the colors that are not removed on the chroma key layer (white).

REPRESENTATION OF THE CHROMA KEY ON THE MONITOR

A YUV color space is displayed on the top left corner of the monitor to represent the color range selected in the chroma key. It contains additional scales, with 'sliders' to reflect the hue, saturation and black level (or brightness) of the selected color range. The grey box displayed on the color space represents the selected color range.



DEFINITION OF THE CHROMA KEY PARAMETERS

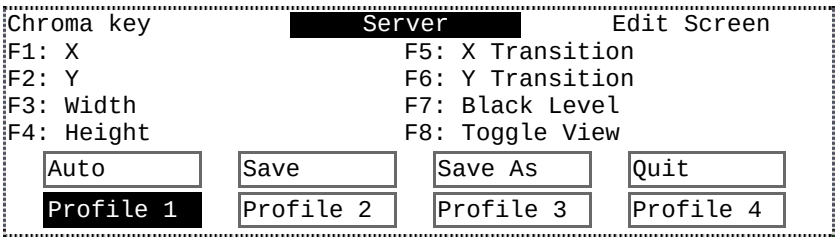
The chroma key parameters are explained in the table below:

Parameter	Description
RGB Hue Value Definition	
X	Moves left and right the color range in the color space.
Y	Moves up and down the color range in the color space.
Tolerance Definition	
Width (W)	Widens or narrows the color range on the X axis in the space.
Height (H)	Widens or narrows the color range on the Y axis in the space.
Transition Definition	
X Transition (TX)	Widens or narrows (on the X axis) the color range that will be more or less punctured when defining the key layer.
Y Transition (TY)	Widens or narrows (on the Y axis) the color range that will be more or less punctured when defining the key layer.
Black Level	Adjusts the level of transparency of the graphic animation, in other words defines how strong the animation will be displayed.

2.4.4 CHROMA KEY EDIT SCREEN ON THE REMOTE PANEL

INTRODUCTION

You define and manage the chroma key definition from the Chroma Key edit screen. When you are in this screen, the Edit mode is directly active.



In addition, the color space is also displayed at the top left of the operator's PGM monitor when you define the chroma key. It allows you to visualize the range of colors taken into account in the chroma key definition.

For more information refer to the sections:

- Section 'Available Commands' (page 44)
- Section 'Chroma Key Parameters' (page 42)
- Section 'How to Configure a Chroma Key Based on an Automatic Chroma Key' (page 49)
- Section 'How to Configure a Chroma Key Based on an Area Selected on the Playfield (page 50)

AVAILABLE COMMANDS

The following table describes the various commands and parameters available on the chroma key edit screen on the Remote Panel:

Field area or button	Description
Chroma Key Parameters (F1-F7)	Parameters to define the color range taken into account in the chroma key definition. For more information on the various parameters, refer the section 'Chroma Key Parameters', on page 42.
Toggle View (F8)	Toggles between the key layer view (white & black), and image view (color) on the operator's PGM monitor.
Auto (SHIFT+A)	Press this key to perform an automatic chroma key definition that you can then save in one of the available profiles.
Save (SHIFT+B)	Press this key to save the changes into the currently loaded profile (highlighted in black on the Chroma Key

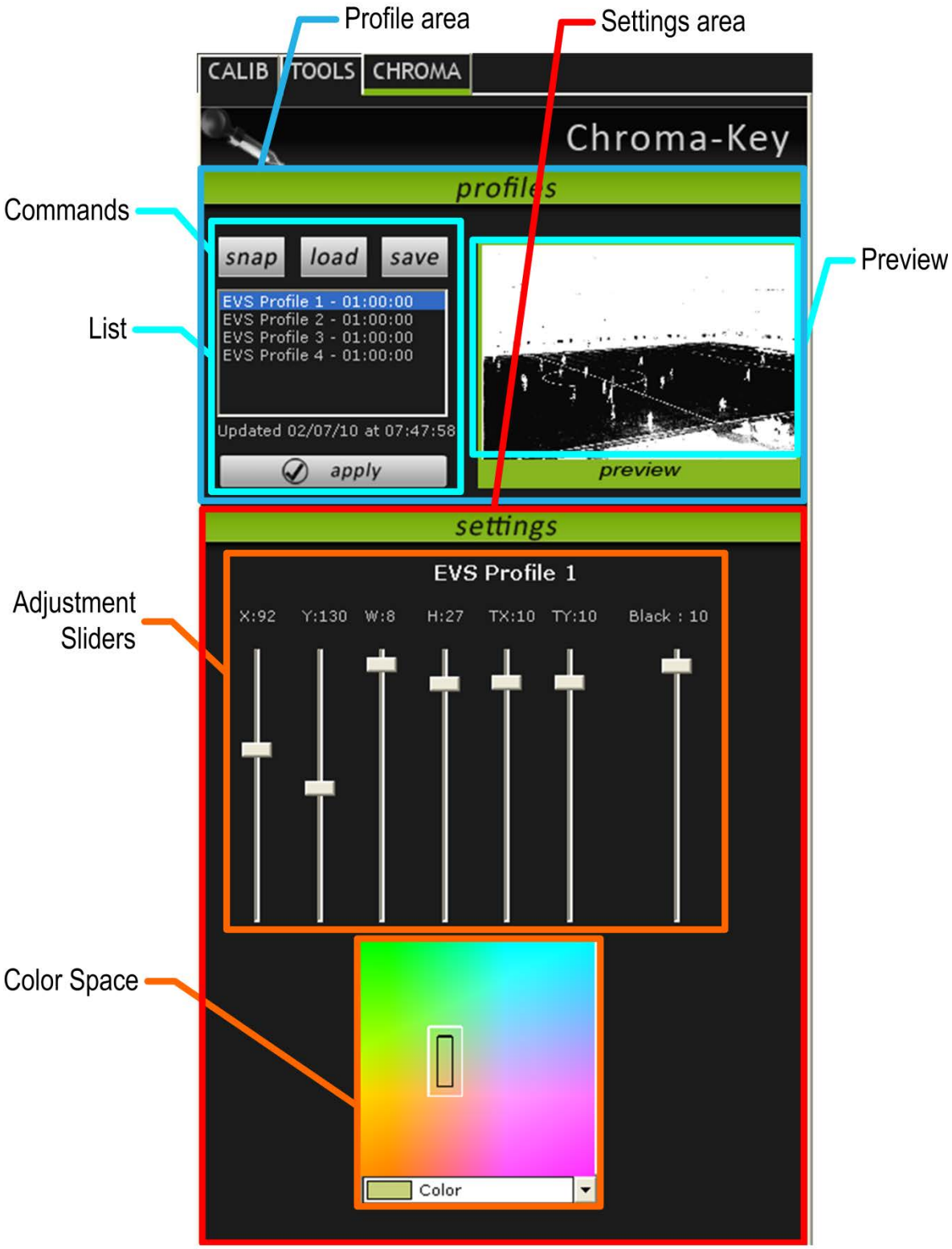
Field area or button	Description
	edit screen.
Save As (SHIFT+C)	Press this key, followed by a key corresponding to a chroma key profile to save the currently loaded chroma key definition under the selected chroma key profile.
Quit (SHIFT+D)	Press this key to leave the chroma key edit screen.
Profile 1 (A) to Profile 4 (D)	Four profiles under which the chroma key definitions can be saved.

2.4.5 CHROMA KEY TAB IN EPSIO

TAB OVERVIEW

You can also refine the chroma key definition in the CHROMA tab in Epsio.

The following schema shows the various areas in the CHROMA tab.


Profile area
Settings area
CALIB
TOOLS
CHROMA
Chroma-Key
profiles
Commands
snap
load
save
List
EVS Profile 1 - 01:00:00
EVS Profile 2 - 01:00:00
EVS Profile 3 - 01:00:00
EVS Profile 4 - 01:00:00
Updated 02/07/10 at 07:47:58
apply
Preview
preview
settings
Adjustment Sliders
EVS Profile 1
X:92
Y:130
W:8
H:27
TX:10
TY:10
Black : 10
Color Space
Color

FIELDS AND COMMANDS IN THE CHROMA TAB

The following table describes the field boxes and buttons on the tab:

User Interface Element	Description
Profiles area	
EVS Profiles list	Lists the chroma key profiles available in the Chroma Key edit screen of the LSM Remote Panel. The chroma key preview is only available once a snapshot has been taken using the Snap button: • Clicking the profile loads a preview of the chroma key on the preview area.
Preview	Shows a preview of the chroma key profile selected in the list.
Snap	Clicking this button snaps the current image from PGM1 and loads it onto the operating monitor.
Load	Clicking this button loads the selected profile in the Settings area.
Save	Clicking this button saves the chroma key values defined for the chroma key profile loaded into the CHROMA tab.
Apply	Clicking this button activates the loaded chroma key profile in Epsio. This corresponds to the chroma key profile selection in the Chroma Key edit screen of the Remote Panel.
Settings area	
Color space	Shows the color range for the chroma key definition. Also refer to the section 'Chroma Key Parameters', on page 42.
Adjustment sliders	Each slider allows modifying one of the chroma key parameter of the loaded chroma key profile. Also refer to the section 'Chroma Key Parameters', on page 42.

Note

When you are refining the Chroma key in Epsio, you can toggle between the chroma key and the image showing the final incrustation by right-clicking the mouse.

2.4.6 METHODS AND RECOMMENDATIONS FOR THE CHROMA KEY DEFINITION

METHODS

There are several ways to configure your chroma key.

This section will explain the two main methods:

- Defining a chroma key based on an automatically generated chroma key.
- Defining a chroma key based on an area selected on a playfield.

STEPS

In both methods, you need to go through the following steps:

1. Creating an offside line.
2. Accessing the Chroma Key edit screen.
3. Generating the initial chroma key definition.
4. Saving the initial chroma key definition in a profile.
5. Opening the chroma key profile.
6. Refining the initial chroma key definition.
7. Saving the final chroma key definition in the loaded profile or in a new one.

RECOMMENDATIONS AND TIPS

In the Chroma Key edit screen, the F8 function allows you to toggle between the chroma key layer (white/black display) and the representation of the final incrustation on the video signal (color display).

It is recommended to:

- Use the chroma key layer to define the chroma key parameters from F1 to F6.
- Toggle to the final incrustation to refine the black level parameter (F7).

Note

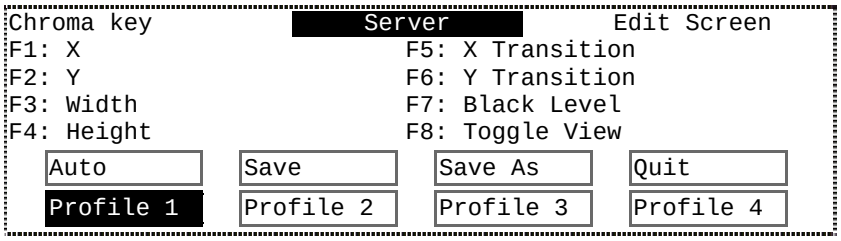
If you cannot see the representation of the final incrustation, this means you need the limits of your playfield could not be automatically validated. You need to validate them manually. See the section 3.2.2 'How to Validate the Playfield Limits', on page 63.

2.4.7 How to Configure a Chroma Key Based on an Automatic Chroma Key

The automatic chroma key is based the colors located within the virtual playfield. For this reason, the virtual playfield must be correctly matched to the real playfield on the snapshot you will use for the automatic chroma key.

To configure a chroma key based on an automatic chroma key, proceed as follows:

1. In the main operational menu, jog to an image of the real playfield that you will use for the chroma key configuration.
2. Press SHIFT+D to enter the Epsio menu.
3. If the virtual playfield is not correctly matched to the real playfield, do one of the following:
   - Validate the field limits as explained in the section 3.2.2 'How to Validate the Playfield Limits', on page 63.
   - Make an offside animation as explained in the section 3.2.3 'How to Create an Offside Line Animation', on page 64.
4. Press SHIFT+B to enter the Chroma Key edit screen.



5. Press SHIFT+A (Auto) to generate an automatic chroma key on which you will base your chroma key configuration.
6. Press SHIFT+C (Save As), then press A, B, C or D to select the profile in which you want to save the automatic chroma key definition.
7. Press the key corresponding to the profile on which you have just saved the automatic chroma key definition.

   The automatic chroma key is loaded onto the operator's PGM. You can now refine it.
8. Press the function key corresponding to the parameter you want to modify and jog the wheel to modify the parameter value as requested.

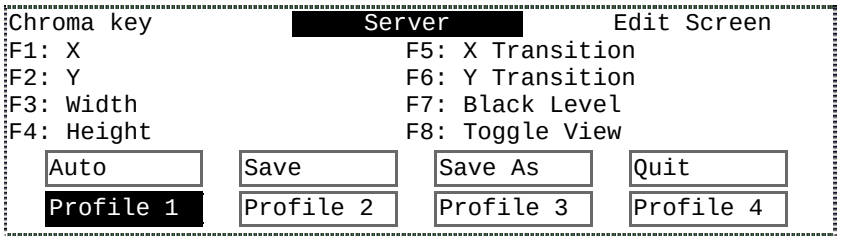
   In this step, you can press F8 when you want to toggle between the key layer and a representation of the final incrustation.
9. Repeat step 8 for all parameters you want to adjust.
10. Once you are satisfied with the chroma key definition, do one of the following actions:
    - SHIFT+B (Save) to save the profile in the currently open profile
    - SHIFT+C (Save as) + A, B, C or D to select a new profile in which you want to save our final chroma key definition.
11. Select the profile you want to use in your offside line animations. By default, the last saved profile is active.
12. Press SHIFT+Q to quit and come back to the Epsio menu.

When you leave the Chroma Key edit screen, the activated profile is the one that will be applied when you will create an offside line animation. The active profile is displayed on a black background on the Chroma Key edit screen.

2.4.8 How to Configure a Chroma Key Based on an Area Selected on the Playfield

To configure a chroma key based on an area selected on the Playfield, proceed as follows:

1. In the main operational menu, jog to an image of the real playfield that you will use for the chroma key configuration.
2. Press SHIFT+D to enter the Epsio menu.
3. Press SHIFT+B to enter the Chroma Key edit screen.



4. Press A, B, C or D to select the profile on which you will configure your chroma key.
5. Press F8 to display the video signal in color on the operator's PGM.
6. Looking at the operator's preview, draw a rectangle with the mouse on the image of the playfield to select an area that contains the basis color for your chroma key.
7. Press the function key corresponding to the parameter you want to modify and jog the wheel to modify the parameter value as requested.

   In this step, you can press F8 when you want to toggle between the key layer (black and white), and the representation of the final incrustation.
8. Once you are satisfied with the chroma key definition, press SHIFT+C (Save as), then press A, B, C or D to select the profile in which you want to save your final chroma key definition.
9. Select the profile you want to use in your offside line animations.
10. Press SHIFT+Q to quit and come back to the Epsio menu.

When you leave the Chroma Key edit screen, the activated profile is the one that will be applied when you will create an offside line animation. The active profile is displayed on a black background on the Chroma Key edit screen.

2.5 ADDING AND CUSTOMIZING THE GRAPHIC SUITE

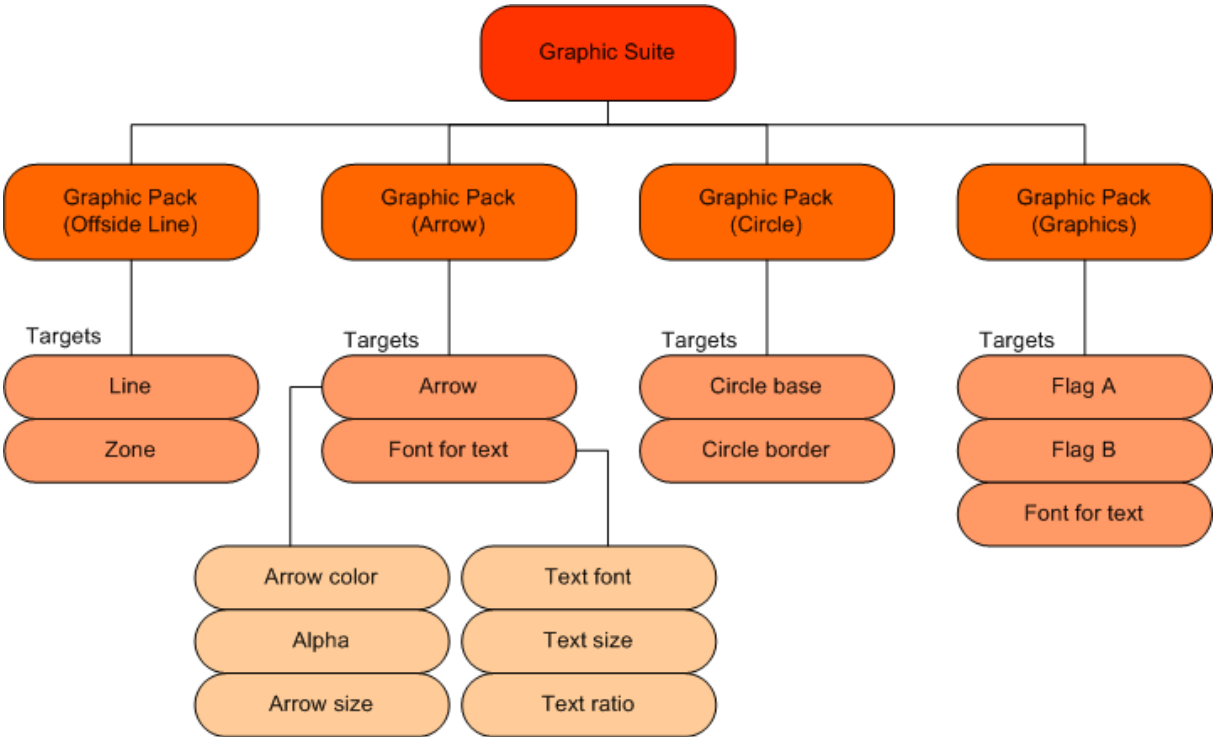
2.5.1 GRAPHIC SUITE DEFINITION AND COMPONENTS

The graphic suite includes the graphic packs for the various tools you can use in Epsio (offside, arrow, circle, graphics).

The graphic pack contains the definition of the components of a given Epsio graphic tool, in other words this is the graphic chart of the tool.

A series of template graphic packs is available for each graphic tool. When the graphic pack is loaded, its various targets (components) can be customized to your needs.

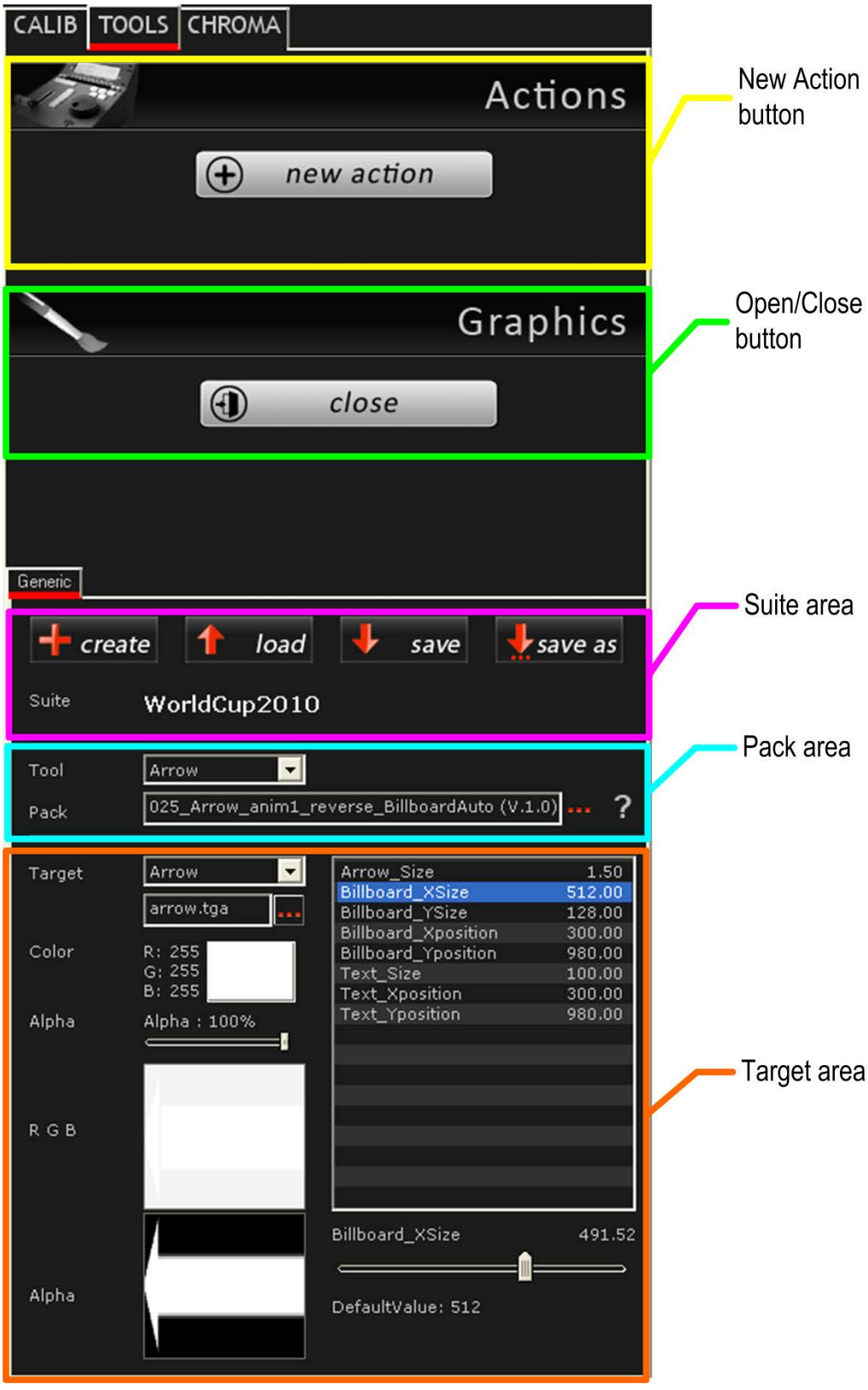
The following schema gives you an overview on the elements included in a graphic suite, and how they are hierarchically organized. The customization is performed at the level of the target parameters. The schema does not show all possible targets and target parameters for the available tools.



To be able to perform an animation in Epsio, you need to define and load a graphic suite. You will create, load and modify your graphic suite from the TOOLS tab in Epsio. Once the graphic suite has been loaded in Epsio, the same suite is automatically loaded each time Epsio is started.

2.5.2 TOOLS TAB

TAB OVERVIEW



ACTIONS AREA

The following table describes the user interface elements in the Actions area:

Button	Description
New Action	Not applicable. The fields in this area aim at creating the offside line animations. As Epsio is used in combination with the LSM Remote Panel, the offside line animations are created on the Remote Panel.

GRAPHICS AREA

You will define your graphic suite in the Graphics area. The Graphics area is a tabbed zone that you can display or hide. Once you have defined and loaded your graphic suite, it is recommended to close the Graphics area since you should not need to modify the graphic suite in the course of the event.

The **Edit** button shows the tabbed zone in the Graphics area.

When this zone is open, the **Edit** button becomes a **Close** button that allows the user to hide the tabbed zone.

GENERIC TAB

The Generic Tab is the sub-tab in the Tools tab where you define your graphic suite. It contains several areas, named as follows:

- Suite Area
- Pack Area
- Target Area

SUITE AREA

The Suite area contains the various commands you will use to manage your graphic suite:

Field/Button	Description
	Button to create a new graphic suite (.egs file) from scratch.
	Button to select and load the graphic suite you will use in Epsio. You always need to load a graphic suite to be able to use the various graphic tools in Epsio.

Field/Button	Description
	Button to save the currently open graphic suite.
	Button to save the currently open graphic suite under a new name.
	Name of the loaded suite

PACK AREA

The Pack area allows you to select the graphic packs that you want to work with for each graphic tool. If requested, the selected graphic pack can be further edited in the Target area.

Field/Button	Description
	The **Tool** field allows you to select the graphic tool you want to define a graphic pack for.
	The **Pack** field displays the graphic pack assigned to the tool. The ellipsis icon next to the **Pack** field enables you to select the graphic pack you want to work with. The interrogation mark next to the ellipsis icon gives you access to a PDF document that includes: • a static preview of the animation, • the modifiable parameters, • the associated commands on the Remote Panel.

TARGET AREA

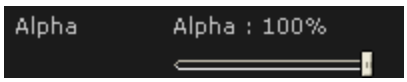
In the Target area, you can refine the definition of the various components included in the graphic pack you have selected in the Pack area. The components of a graphic pack are called 'targets'.

This step is optional since you can decide to keep all predefined values of the selected graphic pack. The parameters you can customize will depend on the type of target you are editing:

Field/Button	Description
	Drop-down field to select the type of target you want to edit in the selected graphic pack.
	Field to select the template image you will use. **Note** The template image needs to be in TGA 32-bit format.

Main Parameters

The main parameters associated to the loaded target are displayed on the left. These parameters are described in the table below.

Field/Button	Description
	Specifies the color of the selected component. Click the color frame to open the color palette, and select the requested color.
	Slider that allows defining the transparency of the Alpha layer of the selected component. The Alpha field allows defining the transparency for individual components, whereas the black level of the chroma key allows defining the general transparency for the offside line animation.
	Displays the result of the color selection (RGB) for the loaded target.
	Displays the result of the alpha channel selection for the loaded target.
	Drop-down field to select the font to be used for the text to be displayed.

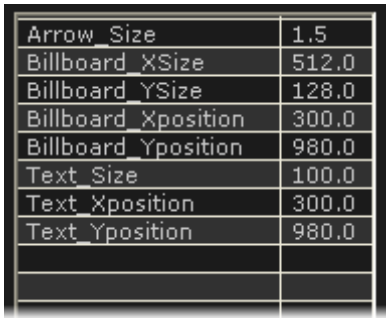
Note

The fonts need to be copied to the C:\WINDOWS\Fonts directory for them to be available in Epsio.

They are not saved in the graphic pack itself. They consequently need to be available on any Epsio workstation where the graphic pack using the specific font will be installed.

Specific Parameters

Other more specific parameters associated to the loaded target are displayed in a table on the right:



Arrow_Size	1.5
Billboard_XSize	512.0
Billboard_YSize	128.0
Billboard_Xposition	300.0
Billboard_Yposition	980.0
Text_Size	100.0
Text_Xposition	300.0
Text_Yposition	980.0

You cannot modify the values directly in the table.

You can however click or double-click the values in the table, which displays respectively a slider or a dialog box to enable you to modify the value.

For more information, refer to the section 2.5.4 'How to Customize a Graphic Suite', on page 57.

2.5.3 How to Create a Graphic Suite

This procedure explains how to create a graphic suite to which you will associate the predefined graphic packs you will need to create animations.

To create a graphic suite, proceed as follows:

1. In the TOOLS tab, Graphics area in Epsio, click the **Edit** radio button in the Tools working mode area:

   The **Generic** tab is displayed in the lower part of the Tools tab:

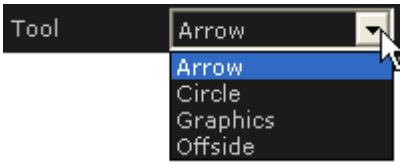
2. In the Graphic area in Epsio, Generic tab, click the

button.

3. In the Save As window, type the name you want to give to your graphic suite in the **File Name** field, and click **Save**.

   This creates a graphic suite (.egs file) you will associate the graphic packs to.

4. In the Generic tab, click the arrow in the **Tool** drop-down field,



and select the tool to be included in your graphic suite.

5. In the Generic tab, click the ellipsis icon on the right of the **Pack** field, and select the default graphic pack (.egp file) you want to use.

   A static preview of the animation, with the related parameters and associated commands on the various graphic packs are available as you click the icon.
6. Repeat the steps 4 and 5 for each available tool.
7. Click the **Save** button to save the changes in the graphic suite you have created.

The suite whose name is displayed at the top of the Generic tab is the loaded graphic suite, in other words the suite that will be taken into account as you create animations in Epsio.

If you want to customize the graphic packs of your graphic suite, refer to the section 2.5.4 'How to Customize a Graphic Suite', on page 57.

2.5.4 How to Customize a Graphic Suite

Introduction

Once you have created your graphic suite by assigning predefined graphic packs (as described in section 2.5.3), you can customize your graphic packs as follows:

1. In the TOOLS tab, Generic tab, and Graphic area, click the **Load** button and select the graphic suite you want to edit.

   The selected graphic suite is loaded.
2. If you want to save your customized graphic suite under a new name, the **Save As** button and assign a name to the customized graphic suite.

   Otherwise, the changes will be saved in the loaded graphic suite.
3. In the Tool area, select the tool you want to edit the target parameters for from the **Tool** drop-down field:

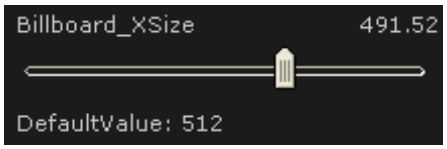
4. In the Target area, select the target you want to customize in the **Target** drop-down field:

The parameters associated to the loaded target are displayed below the **Target** field, or in the table on the right.

5. To edit one of the main parameters displayed on the left of the table, you can directly edit the field values:
   - o For a color selection, click the colored square and specify the RGB values.
   - o For a slider, move the slider to the left or right to respectively decrease or increase the parameter value.
   - o For other fields, proceed as usual.
   - o Click the Save button regularly to save your changes.
6. To edit one of the parameters displayed in the table, proceed in one of the following ways:
   - o To modify the value using a slider, click once the requested parameter.

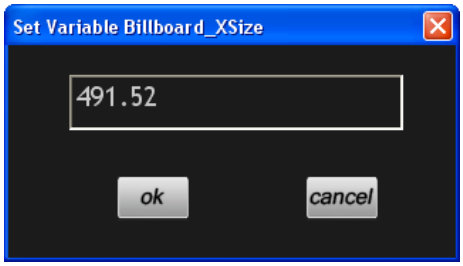
     This displays a slider below the table:

New!



     Move the slider to the requested value. The value is automatically modified in the table. See also the note below.
   - o To directly type the requested value in a field, double-click the requested parameter:

     This opens a dialog box similar to the following one:



     Click in the field, type the requested parameter value and click OK.
7. Click the Save button to save the changes in the graphic suite.

Note on sliders

The displayed slider range corresponds to a portion of the full available range, and depends on the selected value.

If the requested value is not available in the slider range, move to the nearest value available, select another field, then select again the requested field. The slider range will be adapted and will include the requested value.

2.6 DEFINING THE REPLAY SETTINGS

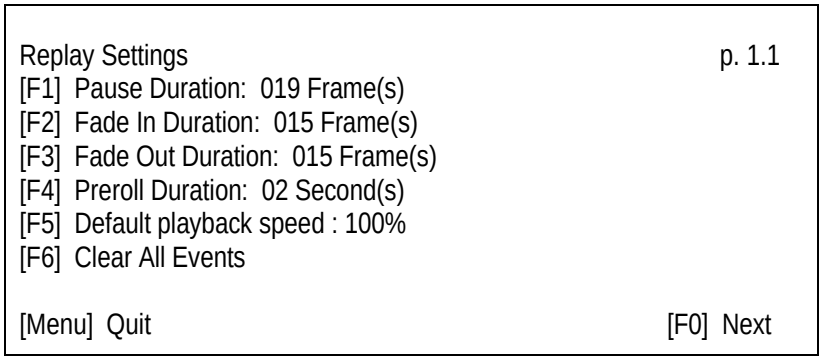
INTRODUCTION

The Replay settings are applied by default when you play back the offside line animation once it has been created.

HOW TO MODIFY THE REPLAY SETTINGS

You can modify the Replay settings as follows:

1. From the main menu, press SHIFT+D (EPSIO) to enter the Epsio menu.
2. From the offside line mode, press SHIFT+MENU to display the Replay settings screen:


Replay Settings p. 1.1
[F1] Pause Duration: 019 Frame(s)
[F2] Fade In Duration: 015 Frame(s)
[F3] Fade Out Duration: 015 Frame(s)
[F4] Preroll Duration: 02 Second(s)
[F5] Default playback speed : 100%
[F6] Clear All Events
[Menu] Quit
[F0] Next

3. Select the function key related to the setting you want to modify.
4. Jog the wheel to set the requested value.
5. Press MENU to leave the Replay settings screen.

REPLAY SETTINGS

The following table explains briefly the replay settings:

Setting	Description
Pause Duration	Duration of the pause before displaying the animation. The pause duration can be between 0 and 300 frames. It is recommended to have a minimum value of 3 frames.
Fade In Duration	Duration of the fade effect at the beginning of the animation. The fade in duration can be between 0 and 300 frames.
Fade Out Duration	Duration of the fade effect at the end of the animation. The fade out duration can be between 0 and 300 frames.
Preroll Duration	Number of seconds where the clip is paused before the

Setting	Description
	animation when the user presses the Last Cue button. The Preroll value can be between 1 and 60 seconds.
Default Playback Speed	Default playback speed applied during the animation when the user presses the PLAY button. The default playback duration can be between 0 and 300%.
Clear All Events	Clears all the offside animations that have been saved under the F1 to F10 function keys.

3. Creating Graphic Animations

3.1 GENERAL INFORMATION

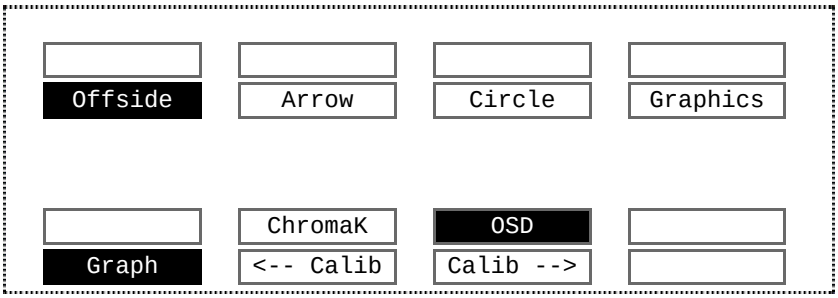
3.1.1 PREREQUISITES

Before you can create and play back an offside line or live animation in Epsio, you must have performed the following configuration steps, which are described in the Configuration chapter:

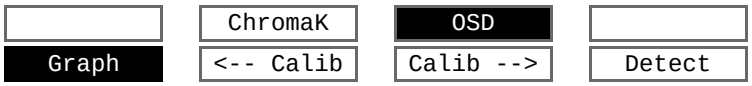
- Calibrating the cameras
- Configuring the chroma key and selecting a chroma key profile
- Creating, customizing and loading the requested graphic suite
- Defining the replay settings

3.1.2 OVERVIEW ON THE EPSIO MENU

From the main operational menu, press SHIFT+D to access the Epsio menu:



EPSIO MAIN MENU



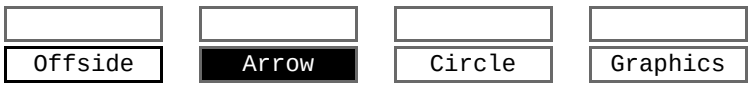
The Epsio main menu contains the following commands:

Command	Description
Graph	Allows the user to display or hide the Epsio animation that has been created. The **Graph** command is active when you enter the Epsio menu.
ChromaK	Allows the user to enter the Chroma Key menu, in which you can configure the chroma key definition. Refer to the section 2.4.2 'Accessing the Chroma Key Menus', on page 40.
OSD	Allows displaying or hiding the OSD information on the output monitor. By default, the OSD information is displayed.
<-- Calib	Allows moving to the previous calibration angle in the Calibration tab of Epsio.
Calib-->	Allows moving to the next calibration angle in the Calibration tab of Epsio.
Detect	The playfield limits are automatically detected when one of the live tools is active. If the automatic detection fails, pressing **Detect** forces again the automatic detection mechanism. This option is only available with the live tools.

SECONDARY MENU

The secondary menu contains the various tools you can use in Epsio.

To access or leave the secondary menu, press the MENU key on the Remote Panel.



To activate a tool in the secondary menu, click the key corresponding to the requested tool: Offside (A), Arrow (B), Circle (C), Graphics (D).

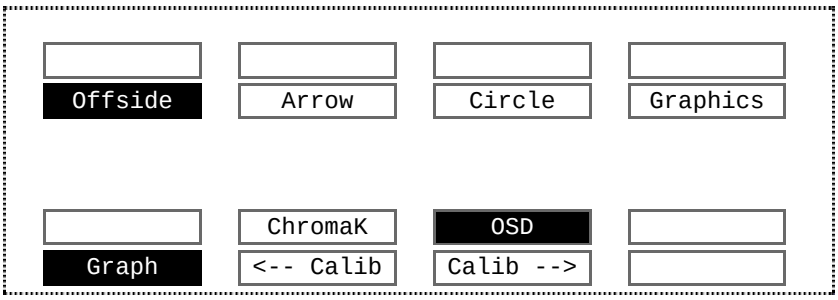
3.2 CREATING AN OFFSIDE ANIMATION

3.2.1 REMOTE MENU WITH OFFSIDE FEATURE ACTIVE

If you want to create an offside line, you need to do the following before you enter the Epsio menu:

- Position on the frame where you want to create an offside line animation.

From the main operational menu, press SHIFT+D to enter the Epsio menu:



The Epsio menu is displayed with the **Offside** tool active.

If the Offside tool is not active, you can activate it as you activate a live tool (See section 3.3.1 'How to Activate a Live Tool', on page 66.

The Graph feature is active by default.

The **Mark** key is blinking red on the LSM Remote Panel.

The virtual playfield is displayed on the operator's PGM.

Note

If the playfield limits are automatically detected, the virtual playfield lines are red. Otherwise, the virtual playfield lines will be white. In this case, you first need to validate the playfield limits manually.

3.2.2 HOW TO VALIDATE THE PLAYFIELD LIMITS

INTRODUCTION

Based on the calibration performed, the playfield limits are automatically detected and matched to the virtual playfield when you enter the offside line mode. In this case, the virtual playfield lines are displayed in red.

If the image on which you want to create your offside line is slightly blurred, or does not display enough lines on the playfield for the automatic detection to work properly, the virtual playfield will be made of white lines.

If the auto-detection of the playfield does not work (white lines) or if the virtual playfield lines are not perfectly matched to the real playfield, you first have to validate the playfield limits. This action consists of repositioning the virtual playfield limits onto the real playfield limits.

PROCEDURE

To validate the playfield limits, proceed as follows:

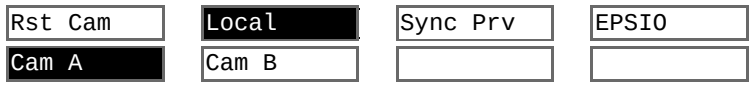
1. When you have entered the offside line mode, right-click one of the points on the virtual field. This can be a virtual point you have added during the calibration.
2. Drag the virtual field to match the real playfield.
3. Release the mouse.
4. Use the mouse wheel to adjust the zoom.

The real playfield limits have been validated, and the virtual playfield lines are now displayed in red on the monitor.

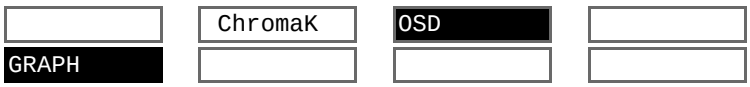
3.2.3 HOW TO CREATE AN OFFSIDE LINE ANIMATION

To create an offside line animation, proceed as follows:

1. In the operational menu, click A, B, C or D to select the camera that you want to use to create the offside line animation:



2. Pause on the offside frame.
3. Press SHIFT+D to access the Epsio menu.



   The GRAPH feature is automatically active (black background).
4. Looking at the operator's PGM, position the offside line using the mouse or the jog.
5. Press MARK. This has the following effects:
   - The virtual playfield is removed on the operator's PGM.
   - A snap is created on the director's preview.

6. If you want to adjust the position of the offside line, press CLEAR.

   The nowline returns to the position on the record train that was selected when you entered the Epsio menu in step 3.
   Repeat step 5 to mark a new position for the beginning of the offside line animation.
7. Go back to a position before the TC where you have marked the start of the offside sequence:
   - Press Last Cue to go back to the predefined pre-roll
   - Jog to the requested position
8. To play the offside line sequence back with the offside line animation, do one of the following:
   - Press PLAY to play back at the predefined playback speed.
   - Use the lever.

The director's PGM and the operator's PGM are running and pause when it gets to the beginning of the offside line animation. The pause duration depends on the Pause Duration setting. The animation is then played.

9. After the animation has been played, you can use the lever or press PLAY to carry on playing the record train.
10. Press RECORD to go out of the Epsio menu.

If the operator keeps the Graph command active, the graphic will be played when the clip will go on air.

If the director invalidates the offside line on his PGM, the operator can press A again to deactivate the Graph command. When the clip will go on air, the offside sequence will be played out 'clean', without the offside line animation.

3.2.4 SAVING POSITIONS OF OFFSIDE LINE ANIMATIONS

You can save the position of maximum ten offside line animations using the function keys F1 to F10.

HOW TO SAVE THE POSITION OF AN OFFSIDE LINE

When you have marked your offside line using the MARK key, you can save its position by pressing the F_ keys on the Remote Panel.

HOW TO RECALL THE POSITION OF AN OFFSIDE LINE

To recall the offside line position you have previously saved under a function key, you first need to enter the Epsio menu and activate the offside line mode.

Recall the position by pressing the F_ key corresponding to the saved position of the requested offside line.

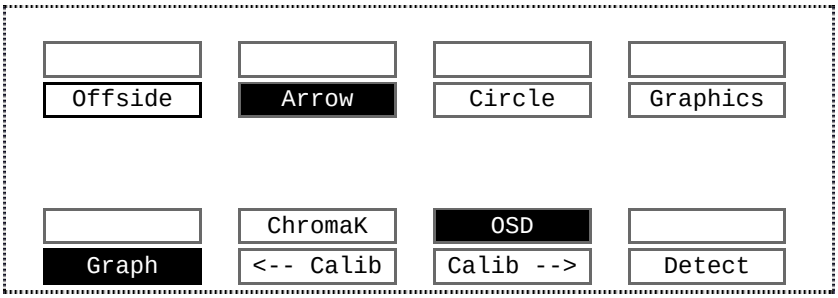
Once you have recalled the position, you can press MARK to redefine the offside line animation at the position you have recalled.

3.3 CREATING A LIVE ANIMATION

3.3.1 HOW TO ACTIVATE A LIVE TOOL

To activate a live tool in the Epsio menu, you need to do the following:

1. Press MENU to enter the secondary menu.
2. Select the key corresponding to the requested live tool:



The secondary menu closes automatically.

The selected live tool is displayed on a black background, and the Detect command is displayed in the main menu.

3.3.2 HOW TO CREATE AN ARROW OR CIRCLE ANIMATION

When you are in the Epsio main menu, and have selected the live tool you want to use, proceed as follows to create a live animation:

1. Looking at the operator's PGM, press D (Detect) to refresh the automatic field detection based on the live feed.

   The virtual playfield is matched to the real playfield.
2. Position the mouse pointer where you want the arrow to start or the center of the circle to be displayed.

   The live animation is applied to the current timecode of the video material.
3. You can then perform one of the following actions:
   - Click again on the field with the mouse to reposition the animation.
   - Press Mark to remove the virtual playfield in red wireframe.
   - Press A (Graph) to hide the animation (if requested).
   - Press the TAKE key to toggle between the arrow and the circle animation.

3.3.3 USING THE GRAPHICS TOOL IN EPSIO

As soon as the Graphics live tool is activated in the secondary menu, the graphic defined in the graphic suite will be displayed continuously as soon as the user comes back to the Epsio main menu, and as long as the Graph command is active.

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